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THE EFFECTS OF COPING ON THE PSYCHOLOGICAL WELL-BEING OF
INDIVIDUALS WHO ARE LATE-DEAFENED

BY

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B.S., Illinois State University, 1993

M.S., University of Illinois, 1996

DISSERTATION

Submitted in partial fulfillment of the requirements
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Abstract

Recent research supports the application of the theory of adaptation to various groups of individuals with disabilities. The premise of the theory is that individuals with certain disabilities may have greater difficulty adapting to their newly acquired level of functioning (Diener, Lucas, & Scollon, 2006). The purpose of this study was to examine the relationships between disability factors and psychosocial outcomes, specifically psychological well-being, in a sample of individuals who lost their hearing after age 12. Coping was examined to determine if it was a mediator of the relationships between the disability factors (age of onset, severity of disability, and adaptation) and the psychological well-being of individuals who are late-deafened. Participants (N = 202) completed a survey, including a demographic questionnaire, the Hearing Handicap Inventory for Adults, the Reaction to Impairment and Disability Inventory, the Ways of Coping Questionnaire, and the Psychological Well-Being scale. SPSS and LISREL were used to test the four main hypotheses.

Final analyses showed that emotion focused coping did not mediate the relationship between age of onset of hearing loss or adaptation and psychological well-being. However, the structural equation model showed that emotion focused coping mediated the relationships between perceived severity of hearing loss and psychological well-being, and problem focused coping mediated the relationship between adaptation to disability and psychological well-being. In addition, the fully mediated model proved to be a more parsimonious fit than the model that included direct relationships. Finally, comparison of this sample to other research samples revealed significantly lower levels of

psychological well-being and adaptation to disability. Limitations and directions for future research are discussed.

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Chapter I - Introduction

At least 54 million people or approximately one in five or 20% of the population in the U.S. have a cognitive, emotional or physical disability (Livneh & Antonak, 2005). About 15% of the adult population has a hearing loss (Andersson & Hagnebo, 2003), a pervasive condition that affects people socially, emotionally, and financially. It inhibits communication in personal relationships, and social and employment networking. Hearing loss can most noticeably affect a person's ability to make new personal and vocational connections. There is debate over whether a causal relationship between hearing loss and psychological distress exists; however, the link from hearing loss to increased stress and coping is evident (Andersson & Hagnebo, 2003; de Graff & Bijl, 2002).

This chapter is a review of the factors that have been shown to affect how individuals with disabilities cope with, and adapt to chronic illness and disability, specifically hearing loss. Some contextual factors that affect how individuals adapt to disability are severity of condition, duration of condition, age of onset, gender, environmental conditions and coping (Livneh, 2001; Livneh & Wilson, 2003). Adaptation and coping have been shown to be directly related to psychosocial outcomes, such as psychological well-being and life satisfaction (Livneh & Antonak, 2005; Livneh & Cook, 2005). These factors and relationships have been examined in terms of the psychological well-being of individuals who are late-deafened.

Hearing Loss

Hearing loss is defined as “a functional limitation in hearing normal conversation” (National Institute on Disability and Rehabilitation Research, 2009). There

are many causes of hearing loss that can occur over one's lifetime. There are categories to distinguish loss, as well as distinction for when loss occurs. Children, who have lost their hearing before age three, or prior to learning speech, are considered to be "prelingually" deaf. Children who lose their hearing after this age are considered to be "postlingually" deaf (de Graff & Bijl, 2002). Adolescents who lose their hearing at approximately age 13, and anyone who loses hearing after this age, are considered to be "postlingually, late-deafened" (Mason, 1996). According to Kashubeck-West and Meyer (2008), individuals who are late-deafened are considered to be a distinct group among the deaf, as their personal experiences are likely quite unique from the group that is prelingually deaf. Late-deafness is unique because it is hearing loss that is adventitious, meaning that it is generally unexpected and acquired later in life rather than at birth, and therefore will require psychosocial adaptation.

Hearing loss is a pervasive disorder affecting many aspects of life. De Graff and Bijl (2002) specifically qualified hearing loss as a "chronic disorder." In addition, studies in the field of Chronic Illness and Disability (CID) with a strong emphasis on adaptation to disability, examine hearing impairment as both an acquired disability and as a disability from birth (Livneh & Antonak, 2005). Livneh and Antonak (2005) defined CID as a chronic condition that includes cognitive, physical or emotional disorder that is adventitious (occurs by accident or under unusual or unexpected circumstance) or congenital (existing from birth), and limits an individual's ability to engage in activities of daily living, such as self-care, working, and going to school. As with many CIDs, hearing loss can be degenerative, meaning that function can decline or the condition can exacerbate over time. Two of the greatest concerns for individuals with CID are

continuous adaptation to the condition, and the need for interventions to facilitate coping. Stress, crises, loss, adaptation, and quality of life, specifically psychological well-being, are of the utmost concern for this population. Lucas (2007) documented that individuals with long-term disabilities (which includes individuals with hearing loss) showed little ability to adapt over time, indicating that acquired disabilities can permanently alter happiness, well-being and life satisfaction.

Leigh et al. (1996) classified the three most commonly held perspectives on hearing impairment. The first perspective is through the medical model, which focuses on the physiological aspects of deafness, specifically functioning of the middle or inner ear. The medical model focuses on the dysfunction of the ear, rendering deafness to a mere problem of the anatomy.

The second perspective on deafness is from audiology, which focuses on the ability of the person to communicate, and his or her level of residual hearing. Kaplan (1996) referred to this as the Pathology model. People with mild hearing loss require little intervention to communicate. However, individuals with a moderate, severe, or profound hearing loss require greater intervention to assist with communication. If an individual with severe or profound hearing loss cannot be helped with assistive technology (such as hearing aids, or cochlear implants), then the use of sign language, such as American Sign Language (ASL), and speech reading may be employed to facilitate communication.

The third position on deafness is from a cultural perspective. The first two perspectives denote the application of disability/handicapped status to this population. Deaf culture does not acknowledge hearing loss as a deficit, but instead it is viewed as a natural and normal characteristic and part of one's self-concept. Deaf culture celebrates

its language and cultural practices, viewing hearing loss as a characteristic of the population, but one that invokes pride. This last position is one of function and culture, rather than disability status. Often, people who relate to this last position find that in being deaf, they identify with the deaf community, and with that, the Deaf culture.

Deaf Culture

The Deaf culture views the inability to hear as something to be protected and understood as a part of the culture and self-concept (Middleton, Hewison, & Mueller, 1998). Individuals within the Deaf culture do not focus on loss or limitation, but embrace the culture and language of the population, which is American Sign Language (Leigh, 1996, 2009). The Deaf culture is a group that is proud to be deaf. The view on deafness is not pathological, but as a defining asset of the community. Kaplan (1996) and Leigh (2009) also referred to this view as the Cultural Model, which focuses on function and use of assistive technology to better one's life. Signed language is considered the primary mode of communication or the natural language for this group. English may be used as a second language; however, oral communication is frowned upon. The capital "D" in Deaf signifies a sense of well-being and completeness of the individual and community (Leigh, 2009).

Kaplan (1996) documented that not everyone who is deaf shares the same beliefs and values held by Deaf culture; the use of ASL and level of competency being one such value. Another difference is the view on cochlear implants. Many within the Deaf community are opposed to the use of cochlear implants as they believe it devalues their culture by rendering deafness to a mere medical problem or something that should be medically alleviated, rather than valued. At a broader level, there is a current movement

to recognize deafness as a culture and an ethnicity. Leigh (2009) upheld this position, supporting the argument that Deaf individuals represent a minority group that has a representative language, values, practices, culture, and has suffered oppression for some time.

People who are not deaf or do not have a hearing loss may be included in this culture, but use of a signed language is necessary, as it is a core piece of the identity of this community. According to Kaplan (1996) acceptance of individuals who are not deaf does not come easy and must be earned from the group. Likewise, people who are deaf, but do not subscribe to Deaf culture, or those who have some residual hearing or speech ability many not be easily accepted, therefore becoming marginalized from a minority group with which they feel they identify. Individuals who become late-deafened are abruptly confronted by changes in identity and the differences between the Deaf and hearing cultures. Individuals who are late-deafened usually perceive their hearing loss as a disability and must come to terms or adjust to a new self-concept or identity. Leigh (2009) stated that individuals who are late-deafened go through an identity shift, and although their community affiliation may remain in the hearing culture, they do report that belonging to a group, specifically for individuals who are late-deafened, such as the Association for Late-Deafened Adults (ALDA), is tremendously beneficial. Individuals who are deaf, but are part of the hearing culture however, may experience emotional turmoil when negotiating issues of identity, as they are denying their deafness. Yet, there are those who are deaf who report that they are perfectly happy in the hearing culture (Leigh, 2009). Belongingness and identity continue to be a convoluted issue for individuals who are deaf.

In efforts to understand belongingness and identity, Maxwell-McCaw and Zea (in press), recently developed the Deaf Acculturation Scale (DAS). Over time, many individuals who are deaf have aligned themselves within both cultures, and are now bi-cultural. With the many different cultural perspectives- Deaf culture, hearing culture and bicultural, this scale will facilitate the understanding of the benefits and drawbacks of cultural belonging through assessment of the acculturation process.

As with any culture, Deaf culture is as diverse as the next, with disagreements from within on concepts of belongingness, use of a signed language, and the practice of advocacy on behalf of the culture, as members are cautious of threats to the Deaf culture (Leigh, 2009; Middleton, Hewison, & Mueller, 1998). The Deaf cultural model and medical models are two distinct paradigms on opposite ends of the spectrum on disability and rehabilitation, specifically as it applies to adaptation to hearing loss.

Adaptation Theory

Adaptation theory originally advocated that after experiencing a life altering event, over time a person will adapt to the event and will return to his or her original set point of happiness and emotional experience. This original approach was based on Brickman and Campbell's (1971) Hedonic Treadmill theory which surmised that one's emotional experiences are self-regulated by the body's homeostatic system, always keeping one's systems in balance. When speaking of more specific life events, Diener (2000) suggested that, as people experience unpleasant events in life, there is a tendency to regress toward the mean of well-being. In other words, after an unpleasant life experience an individual's assessment of well-being tends to return to its pre-morbid level. Likewise, after favorable experiences, one's interpretation of life satisfaction tends

to return to the set or neutral point. That is not to say that an individual's set point cannot be ultimately raised or lowered, but rather adaptation occurs on an individual level. In other words, after a traumatic event, given enough time, an individual will adapt to his or her new way of life and return to the original set point of well-being.

Diener, Lucas, and Scollon (2006), however, revised this theory of adaptation, explaining that there were five notable changes: 1. One's set point is not neutral, as most people are usually happy; 2. Individuals have set points which are unique to that person; 3. An individual may have a number of set points for well-being, unique to that person; 4. An individual's set points for well-being can change under certain conditions; and 5. Each individual adjusts uniquely to situations and challenges, with some altering of set points in an attempt to adapt. Most important to this study, it is now believed that not all people, given time, will adapt to all situations and circumstances. Some injuries or illnesses are considered too chronic and too challenging for full adaptation. Therefore, individuals with an acquired hearing loss are subject to adaptation theory, as they must acknowledge and adjust to their current physical, mental, or emotional state of being.

Kashubeck-West and Meyer (2008) indicated that the theory of adaptation (Diener, 1984; 2000; Diener et al., 2006) applied to the population of individuals who are late-deafened, as their impairment is adventitious (meaning that it is unexpected and acquired after birth), which speaks directly to the heart of this theory. Based on the medical model and theory of adaptation, individuals who are late deafened have an acquired disability, which requires adaptation to the condition and associated functional limitations. According to Livneh and Antonak (2005), adaptation is a process that takes acknowledgement of the limitations and adjustment in thoughts and actions to

incorporate a new self-concept based on the current condition or limitations. Results from Kashubeck-West and Meyer (2008) demonstrated that women who were late-deafened had statistically significant lower psychological well-being than the general population of women, demonstrating the theory of adaptation holds true for this population of individuals who are late-deafened. Individuals with CID, specifically late-deafness, are challenged to a point that adjustment to new environmental stressors may not be possible and therefore adaptation does not fully occur, ultimately affecting psychosocial outcomes such as psychological well-being.

This approach however, is based on the medical model of illness and disability. This model assumes that one must attempt to adjust or adapt to the new physical/cognitive condition, which generally involves a deficit in function. According to this model, hearing loss later in life requires adaptation to the loss of function and alternatives to oral communication. According to the World Health Organization (1980), impairment is defined as loss or damage to cognitive/psychological functions or physiological structure or function. A disability is considered to be a limitation or restriction in ability to perform activities considered normal for the general population. Last, handicap is defined as a community restriction, resulting from an impairment, that restricts a role (social, vocational, personal) that is considered normal for the general population, depending on age, gender, or culture (World Health Organization, 1980). Under this premise of the medical model, hearing loss is an acquired disability that requires adaptation and must be cured or treated through rehabilitation. Outcomes, such as psychological well-being and satisfaction, are dependent upon disability related

factors, contextual/situational factors, and adaptation to disability (Livneh & Wilson, 2003).

Adaptation to Disability

According to Livneh and Antonak (2005), adaptation to disability is a process of reintegration through acknowledgement of, and adjustment to the condition. There are cognitive, affective and behavioral changes made to accommodate loss to allow for continued growth in life, which includes the vision of a positive future, regardless of limitations. As stated previously, according to the medical model, individuals with a hearing loss are considered to have a chronic condition. According to Lucas (2007), conditions that are degenerative or fluctuate are more difficult to adapt to due to continuous change. Late-deafness is unique because it is hearing loss that is adventitious, meaning that it is generally unexpected and acquired later in life rather than at birth, and can be degenerative, requiring on-going psychosocial adaptation to the condition. Adaptation to disability is one of the primary foci of the rehabilitation field.

Livneh and Antonak (2005) reported that individuals who have experienced late-deafness, as with many disabilities, endure stress, crises, loss and grief, and stigma that go beyond what one generally expects in life. Rehabilitation efforts are provided to help negotiate the social and emotional challenges associated with different disabilities. The most highly regarded outcome of rehabilitation is that of improved quality of life, which encompasses psychological well-being.

Reaction to one's disability is the main determinant of future functioning, including psychological well-being, for individuals with chronic conditions. It is generally accepted in the field of rehabilitation that there is a process of adaptation to an

acquired disability (Livneh & Antonak, 2005). This process commonly consists of a number of psychological stages a person works through during rehabilitation, ultimately accepting and adjusting to the injury or illness and associated disability. Livneh and Antonak (2005) document the stages of adaptation as: 1. Shock; 2. Anxiety; 3. Denial; 4. Depression; 5. Anger/Hostility; and 6. Adjustment.

Central to adaptation to disability is coping. Coping is comprised of the thoughts, actions, and behaviors in which a person engages to manage and/or negotiate personal or environmental crises (Folkman & Moskowitz, 2004). Coping is also conceptualized as a cognitive process which is expected to change over time in reaction to the context of the situation in which the crisis occurs (Lazarus, 1993). Coping plays such a main role in chronic disabilities that it has proven to be a predictor, as well as a mediator and moderator of adaptation to disability. Dependent upon coping style, the process of adaptation to disability directly affects psychological outcomes, such as life satisfaction, self esteem, social and/or vocational functioning and quality of life, and all aspects of psychological well-being (Livneh & Antonak, 2005; Livneh & Wilson, 2003).

Adaptation to adventitious hearing loss is affected by contextual and situation variables; therefore the theory of adaptation (Diener et al., 2006) and the transactional model of coping (Lazarus & Folkman, 1980, 1984) apply to this population, as the premise of each approach is based on a situational and contextual model. Individuals with late-deafness need to constantly adjust to different social situations and contexts, which requires a high degree of adaptation and the ability to cope with ever changing variables.

Coping and Chronic Illness & Disability (CID)

The transactional perspective of coping, a cognitive approach that emphasizes state over trait characteristics, emerged in the 1960s and since then has been the most commonly recognized and documented coping approach in the literature. According to Suls et al. (1996), the transactional approach identified two main styles of coping: emotion focused coping and problem focused coping. Emotion focused coping involves a change in perspective or a re-defining of a situation, allowing an individual to emotionally adapt to the new crisis or situation. Problem focused coping is more action oriented, usually involving the development of a plan of action; at the very least, steps are taken to negotiate the crisis, allowing the individual to adapt to the situation. The transactional or state approach emphasizes the process of coping rather than one's disposition or personality traits. This approach focuses on the cognitive and behavioral changes (coping behaviors) made to allow for adaptation to the situation and context. Suls et al. (1996) cited several early studies that demonstrated that coping is inconsistent from situation to situation or from one context to another. This variability was found to be evidence that states or situations, rather than personality or traits, were predictive of coping behavior.

Within the CID literature, Livneh and Antonak (2005) supported the situational or transactional theory of coping, stating that coping fluctuates over time and is fluid to meet the demands of the situation or context. In addition, the authors documented that for the CID population, passive approaches to coping such as avoidance or denial (i.e., emotion focused coping), proved to be less successful than approaches that are action oriented or goal oriented, such as problem solving. Although emotion focused coping has

shown to be effective early on in crises, over time, it is less functional (Livneh & Cook, 2005). In addition, emotion focused strategies, such as disengagement has been shown to contribute negatively to adjustment to disability (Livneh & Antonak, 2003). Passive approaches to coping have proven to be less successful for individuals with CID (Livneh & Antonak, 2005). Finally, Folkman and Moskowitz (2004) documented that a majority of studies demonstrated that more passive approaches to coping were associated with greater distress in the long-term. More active approaches were correlated with higher levels of well-being and with more successful adaptation to disability for individuals with CID, including hearing loss (Folkman & Moskowitz, 2004 & Livneh & Antonak, 2005). The authors documented that coping plays an important role in the lives of individuals with disabilities, including hearing loss, as it is related to adaptation to disability and other psychosocial outcomes such as psychological well-being and satisfaction.

Livneh and Wilson (2003) examined two common roles of coping in the CID literature. The first role was that of a predictor, which included an examination of the unique contribution of coping as a predictor of a psychosocial outcome such as psychological well-being for individuals with CID. As a mediator, the authors explored how coping lessened the impact of stressors, such as disability-related factors, on psychosocial outcomes. Tabachnick and Fidell (2001) defined a mediator is an intervening variable, upon which the relationship between predictor and criterion variables is dependent. Although passive types of coping have been negatively related to adaptation to CID, ultimately, the primary function of certain styles of coping as a mediator is to reduce long-term negative effects of stressors, in turn promoting psychological well-being (Livneh & Wilson, 2003).

Psychological Well-Being

Psychological well-being has long been discussed and is ultimately derived from the historical term of happiness (Ryff & Keyes, 1995; Seligman & Csikszentmihalyi, 2000). In 2002, Keyes, Shmotkin and Ryff defined psychological well-being as the “perception of engagement with existential challenges of life” (p. 1007). Psychological well-being evolved from developmental theory and accounts for growth and change, which takes place over the course of a lifetime. Incorporating the main concepts of many theories of well-being, Ryff’s (1989a) conceptualization is currently recognized as the gold standard for psychological well-being (Karademas, 2007). Lent (2004) reported on Ryff’s success in defining psychological well-being and confirmed that it is the most widely recognized conceptualization of psychological well-being.

Ryff (1989a, 1989b) offered a theoretically-based, multidimensional definition of psychological well-being, which is essentially positive psychological functioning. Ryff’s model provided the theoretical basis for the following six dimensions of psychological well-being: self acceptance, which is a positive evaluation of oneself and one’s past life; personal growth, which is a sense of continued growth and development as a person; purpose in life, which is the belief that one’s personal life is purposeful and meaningful; positive relations with others, which is possession of quality relationships with others; environmental mastery, which is the capacity to manage effectively one’s life and surrounding world; and autonomy, which is a sense of self-determination.

According to Livneh and Antonak (2005), the most highly regarded outcome of rehabilitation for individuals with an adventitious disability is improved quality of life, which encompasses psychological well-being. Individuals with CID are provided

rehabilitation in efforts to promote adaptation to disability. Reintegration of limitations allows the future pursuit of goals and dreams and along with it the promotion of quality of life and psychological well-being. However, according to adaptation theory (Diener et al., 2006), how one adapts to a disability may vary, as adaptation is multi-dimensional and individually dependent. Each individual is unique in how he or she responds to stimuli, especially permanent conditions, such as hearing loss, which can affect psychosocial outcomes like life satisfaction and psychological well-being.

At this time, only one published study could be found incorporating Ryff's concept of psychological well-being with individuals who have CID, specifically, late-deafness. Kashubeck-West and Meyer (2008) examined the psychological well-being of female adults who experienced postlingual, late-deafness, revealing statistically significant differences between females who are late-deafened and the general population. On overall psychological well-being and five of the six subscales (excluding autonomy), women who were late-deafened reported significantly lower well-being than women from general population samples, demonstrating that the theory of adaptation (Diener et al., 2006) holds true for this population. The next step was to examine factors that affect coping, which in turn may determine psychological well-being for individuals with late-deafness.

Psychological well-being has been established as a main outcome of rehabilitation for individuals with disabilities. Rehabilitation is provided to promote life satisfaction and psychological well-being, as it allows for future development of goals and dreams (Livneh & Antonak, 2005).

Severity of Disability

A factor of major importance to individuals with hearing loss is the severity of hearing loss. Severity of hearing loss is one's perception of loss or perception of the impact of loss, rather than one's documented loss of hearing in decibels (dB). Many individuals with hearing loss are unsure of their actual medically defined loss of hearing. Also, loss of dB is only weakly related to perceived severity of disability or handicap; at best, dB is a poor predictor of psychosocial outcomes (Hallberg & Carlsson, 1991). According to Lucas (2007), the process of adaptation to an acquired disability, based on adaptation theory (Diener et al, 2006), is affected by: 1. The extent of the disability, which includes severity of disability; and 2. Fluctuation/degeneration of condition, which is commonly associated with hearing loss, as it often a degenerative condition. These factors can ultimately, permanently affect well-being.

Perception of severity of disability can affect adaptation to CID. According to Livneh and Wilson (2003), adaptation to CID is predicted by numerous personal, social and contextual variables, including age of onset, severity, self-concept, and social support networks, to name a few. Perceived severity of disability is a function of the mental, emotional or physical limitations experienced from the specific CID. Functionality, which can be assessed objectively or subjectively, is the degree to which various mental or physical tasks can be performed.

According to Miklos (2000), there is a growing trend in health and rehabilitation to examine the relationship between subjective measures of psychological/physical symptoms of distress, such as perceived severity of disability, and outcomes, as subjective measures appear to be more predictive than objective measures (Bess et al.,

1989; Dalton, et al., 2003; Jambor & Elliot, 2005). One particular study on individuals with a specific hearing disorder (tinnitus), determined that subjective ratings of tinnitus were positively correlated with greater psychological distress (Meikle, Vernon, & Johnson, 1984). Other authors also advocate the use of subjective measures of perceived disability when assessing psychological factors associated with hearing loss (Budd & Pugh, 1996; Newman, Jacobson & Spitzer, 1996; Wilson, Henry, Bowen & Haralambous, 1991).

A study by Helvik et al. (2006) on the psychological well-being of adults with acquired hearing loss failed to demonstrate a significant association between perceived hearing loss severity and psychological well-being. It was noted that the chosen instrument had a four-point scale, which may not have been precise enough to detect true association between the variables. In addition, the authors acknowledged that other studies have demonstrated this relationship in older adults (c.f., Bess, Lichtenstein, Logan, Burger, & Nelson, 1989; Dalton et al., 2003).

According to Kelley-Moore, Schumacher, Kahana, and Kahana (2006), numerous studies have used subjective measures of health, such as perceived severity of disability, as a predictor and an outcome in disability related research (c.f., Fried, Bandeen-Roche, Chaves, & Johnson, 2000; Hoeymans, Feskens, Kromhout, & Van Den Bos, 1997). As would be expected, individuals who have multiple impairments or more health challenges (take more medication, experience more pain) tend to rate their health as poor. Yet those in obvious poor health may rate themselves as better than they would be objectively measured. The concept of health is multidimensional and not solely dependent upon objective ratings or presence of a disability.

Perceived severity for individuals with hearing loss is dependent upon numerous factors which are situational and contextual, requiring continuous adaptation to any given situation. All in all, the literature has demonstrated that perceived severity has shown to have a an effect on adaptation, in turn adjusting one's set point of well-being.

Age of Onset

Age of onset of disability is the age at which an individual acquires a chronic condition, illness, or disability. Individuals who acquire a disability later in life may find adaptation to CID a more challenging process than those individuals who were born with an impairment or who acquire it early in life. Kelley-Moore et al. (2006) documented that adventitious disabilities acquired later in life are more challenging, as one does not have as much time to incorporate the associated changes (e.g., functional limitations).

Therefore, a new self-concept does not have the same opportunity to develop, affecting adaptation to present functional limitations. Overall, there is evidence to support age of onset as a predictor of adaptation to CID (Livneh & Wilson, 2003). Developmentally, in later adulthood, self-concept has a solid foundation around vocation, partnership, parenthood, and social networks. It can be a daunting task to shift from an able-bodied identity to a differently-abled identity later in life. Individuals who acquire a disability later in life have to endure the process of adaptation to this new self-concept; therefore, they have a greater tendency to subjectively view themselves as disabled, as their perception of independence has decreased (Kelly-Moore et al., 2006). Also, when engaging in conversation with a person with a disability, other individuals have been documented to maintain less eye contact, have shorter conversations and leave greater body space. For an individual with a hearing loss, routine accommodations may increase

awareness of the disability due to the need to decrease personal space to improve hearing, and the need to increase eye contact to ensure the ability to speech-read, etc. (Hallberg & Carlsson, 1991).

According to Jambor and Elliott (2005), age of onset of hearing loss can be an important determinant of communication, identity and self-esteem. Congenital loss of hearing requires linguistic accommodations to provide for communication, which may impact education, relationships and self-esteem. For individuals who lose their hearing later in life, or post-lingually, a major issue is learning to adapt to new social situations and learning cognitive and emotional strategies to communicate and interact in all contexts. This degree of adaptation can affect identity, social and vocational relationships, self-worth, self-esteem, and ultimately, psychological well-being.

In a study by Kedde and van Berlo (2006) on sexual well-being, age of onset of disability and relationships, men who experienced disability at a later age had lower sexual satisfaction, lower body esteem, and demonstrated more adjustment problems than women who experienced disability at a later age. In a study by Mona, Gardos and Brown (1995) on the relationship between age of onset, disability and sexual self-esteem in women, as age of onset increased, sexual self-esteem decreased. Polat (2003) also found that age of onset has been related to decreased adaptation.

Clearly, as age of onset increases, adventitious disability presents unique challenges that run deeper than affecting activities of daily living and the obvious adjustments needed to adapt to the acquired disability. In addition, CID affects psychological functioning, which as a person ages may make adaptation more difficult. According to adaptation theory, some conditions are too difficult to adapt to. Individuals

with an acquired disability tend to view themselves as more disabled or handicapped compared to their early onset counterpart (Kelley-Moore et al., 2006), which supports the premise of adaptation theory.

Purpose

The purpose of this project was to examine how coping mediates the relationships between characteristics of disability (e.g., age of onset, adaptation, and perceived severity of disability), and the psychosocial outcome of psychological well-being in individuals who are late-deafened, that is, individuals who lost hearing after age 12.

The hypotheses for this study, based upon the research cited above are:

Coping style will mediate the relationships between the three predictors and psychological well-being such that:

H^0 : Emotion focused coping (measured by the Ways of Coping Questionnaire; WoCQ, emotion focused (EFC)* subscale) will not mediate the relationship between age of onset and psychological well-being (as measured by the Psychological Well-Being (PWB) Scale).

H^1 : Emotion focused coping will mediate the relationship between age of onset and psychological well-being. Operationally, increased age of onset will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB Scale.

H^0 : Emotion focused coping (measured by the Ways of Coping Questionnaire; WoCQ, emotion focused (EFC)* subscale) will not mediate the relationship between perception of severity (as measured by the Hearing Handicap Inventory for Adults; HHIA) and psychological well-being (as measured by the PWB scale).

H²: Emotion focused coping will mediate the relationship between perceived severity and psychological well-being. Operationally, greater HIAA scores will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB Scale.

H⁰: Emotion focused coping (measured by the Ways of Coping Questionnaire: WoCQ, (EFC*) subscale) will not mediate the relationship between adaptation (measured by the Reaction to Impairment and Disability Inventory, RIDI) and psychological well-being (as measured by the PWB scale).

H³: Emotions focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, lower RIDI scores will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB scale

H⁰: Problem focused coping (measured by the Ways of Coping Questionnaire: WoCQ, (PFC*) subscale) will not mediate the relationship between adaptation (measured by the RIDI) and psychological well-being (measured by PWB scale).

H⁴: Problem focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, greater scores on the RIDI will predict higher scores on the WOCQ, PFC* subscale, which in turn, will predict higher scores on the PWB scale.

This chapter reviewed a number of factors that contribute to the psychological well-being of individuals who are late-deafened. According to adaptation theory (Diener et al., 2006) individuals who are late-deafened may find hearing loss a significant burden, eventually affecting the adaptation process. However, coping has been cited as a factor that can affect psychosocial outcomes for individuals with CID and therefore may

intervene, affecting the relationship between disability related characteristics (age of onset, perceived severity of disability, and adaptation to disability) and the psychological well-being of individuals who are late deafened.

Chapter II – Literature Review

This chapter presents a review of the theoretical and empirical literature on the relationships among coping and other disability related variables and psychological well-being for individuals who are late-deafened. Hearing loss is a chronic condition affecting the daily lives of individuals who are late-deafened, but the relationship between hearing loss and psychological well-being is not easily assessed, as it is influenced by a multitude of other related variables. This literature review examined the essential components of this study which are: hearing loss, Deaf culture, late deafness, adaptation theory, adaptation to disability, coping, psychological well-being, severity of disability, and age of onset of disability.

Hearing Loss

Hearing loss is a chronic condition negatively associated with health and well-being (Barlow, Turner, Hammond & Gailey, 2007), and is the most prevalent disability in the U. S. population (Leigh, Corbett, Gutman, & Morere, 1996). Approximately 15% of the population will experience a hearing loss by adulthood (Andersson & Hagnebo, 2003). Hearing loss has been conceptualized through three major models: the medical model, the audiological model, and the cultural model (Leigh et al., 1996).

The medical model focuses on the anatomical part of the ear that no longer functions properly. This reduces the entire matter of hearing loss to a simple diagnosis of etiological factors typically grouped by genetic cause, non-genetic cause or causes from syndromes. The medical model focuses solely on the ear, and any other related medical conditions, such as visual or facial abnormalities, or other hearing related problems, such as tinnitus and balance disorders (Barlow et al., 2007). This study is based on the medical

model, utilizing a rehabilitative perspective, which is the process of returning a person to their pre-disability level of functioning (focusing on well-being, quality of life and independence), following an accident or injury (Chubon, 1994). The medical model assumes that an illness or disability is a condition that requires adaptation. At the very least, it is considered a condition that must be ameliorated. Hearing loss is considered a condition that should be examined in terms of loss of function accompanied by proper intervention, such as hearing aids, sign language or cochlear implants to remediate or negotiate the deficit.

The second model is the audiological approach, focusing specifically on the ear, classifies hearing loss by the degree or decibel (dB) of hearing loss and the current communication skill level or ability. This model provides labels for levels of hearing loss such as mild, moderate, severe, and profound. Individuals with mild to moderate loss may experience communication difficulty in noisy settings, whereas individuals with severe to profound hearing loss generally have little use of oral communication and communicate through speech reading and/or a signed language, such as American Sign Language (ASL). Varying degrees of hearing loss can have different implications for socialization, economics, family relations, education, medical, and psychological needs. Each level of hearing loss can have a great impact on the individual, and can influence different life domains.

These first two models are considered medical/disability models. There is a third model, however, which is the cultural model, referred to as Deaf culture (Munoz-Baell & Ruiz, 2000). In contrast to the first two models, the perspective of the cultural model of deafness is from a strength based position on hearing loss (Humphries, 1996).

Deaf Culture

The model of Deaf culture is signified by the use of a capital “D,” in the word Deaf, demonstrating that it is a distinct culture with values and traditions of its own. The primary language of Deaf culture is American Signed Language (ASL). The focus is not on pathology of the ear or loss of hearing, but on the strength and common experiences of membership shared through ASL (Leigh, 1996, 2009). Deaf culture is a minority group (Sue & Sue, 2008) that has experienced discrimination and oppression, similar to any other minority group. Kaplan (1996) stated that not everyone who is deaf shares the same beliefs and values held by Deaf culture. For example, the use of ASL and level of ASL competency differ across individuals who are deaf. Another within group difference is the view on cochlear implants. Many within the Deaf community are opposed to the use of cochlear implants as they believe such use devalues their culture by rendering deafness to a mere medical problem- something that should be medically alleviated rather than valued.

People who are not completely deaf may be included in Deaf culture, but use of a signed language is necessary for inclusion and communication. According to Kaplan (1996), acceptance of individuals who are not deaf does not come easy and such acceptance must be earned. Likewise, people who are deaf, but do not subscribe to Deaf culture, or those who have some residual hearing or speech ability, may not be easily accepted, therefore becoming marginalized from a minority group with which they feel they identify.

Individuals who are deaf have not always been viewed as autonomous; specifically, throughout history, as a group they did not direct their existence and control

their quality of life. According to Humphries (1996), autonomy in the Deaf community came through a struggle of oppression and control. Autonomy was created and garnered through will-power and self-determination of individuals who are Deaf. The Deaf sense of self, and with it autonomy, continue to develop. Sometimes society in general only sees a biological condition, the hearing loss, which is believed to define the person by affecting personality, intelligence, social skills, and maturity. Humphries (1996) stated that individuals who are D/deaf began their life-journey labeled as dysfunctional or marginalized; however, to create wellness, they have adapted to this state of being. Not only have individuals who are D/deaf adapted, they have successfully created an identity and culture (Leigh, 2009).

Jambor and Elliott (2005) examined the self-esteem and coping strategies among Deaf students. Participants were 78 students, most with a moderate hearing loss (85%), 28 males and 50 females, with a mean age of 25 ($SD= 6.88$). In addition to a demographic survey, self-administered questionnaires included measures on self-esteem, coping, identification with the Deaf, and deafness-related factors. Results indicated that self-esteem was positively related to severity of hearing loss and bi-cultural skills, such that those who had a more severe loss and had bicultural skills (could sign and use oral skills) were more likely to have higher self-esteem. However, self-esteem was negatively correlated with oral communication, suggesting that those who had to rely on speech reading and did not use a signed language may have felt more isolated which may have had a negative impact on self-esteem.

From a longitudinal study, Donahue-Jennings and MacTurk (1995) documented that lower levels of mastery were found among infants who were physically disabled

compared to infants who were non-disabled. Infants who are deaf and have parents who are deaf have an advantage, as the parents will be comfortable with, and may desire the child to be deaf. Most children who are deaf however, are born to parents who hear, which may cause anxiety and grieving for the parent. It is therefore likely that individuals who are deaf may demonstrate an external locus of control.

Identity development for individuals who are deaf is not a simple process. Leigh (2009) presented six stages of identity development for individuals who are deaf: 1. Confusion; 2. Frustration/anger/blame; 3. Exploration; 4. Identification; 5. Ambivalence; and 6. Acceptance. Leigh's stage theory of deaf identity development, however, has yet to be empirically supported. Maxwell-McCaw and Zea (in press) have developed a model of acculturation and a corresponding assessment scale. The deaf, being a diverse group, gravitate towards different cultural options as individuals and this scale measures the range of identities for individuals who are deaf. This is the first scale that measured the development of a culturally Deaf identity, as well as a culturally hearing identity.

According to Mason (1996), there are four categorizations of individuals who are deaf: culturally Deaf; hard of hearing; late-deafened; and oral deaf. Each group is distinct and may hold different beliefs and values. As with all groups and cultures, the severity of loss, ability to cope, economic status, education and age of diagnosis creates differences from within (Leigh et al., 1996). One group in particular within the deaf population is individuals who are late-deafened.

Individuals who are late-deafened have been chosen for this study, as adventitious hearing loss is an acquired condition which requires adaptation. According to the medical model, individuals who acquire an impairment later in life require rehabilitation services

to adapt to the current level of functioning; therefore the theory of adaptation applies to individuals with late-deafness. Conversely, the medical model generally would not apply to individuals in the Deaf community, as members do not recognize hearing loss as an impairment, disability or handicap (Leigh, 2009).

Late-Deafness

Individuals who have lost hearing after age 12 are considered to be late-deafened (Mason, 1996). The majority of these individuals have acquired written and oral language, including proper grammar skills. De Graaf and Bijl (2002) documented that age three is the dividing line between pre- and post-lingual deafness and post-lingual, late-onset deafness is experienced after childhood (approximately age 13 and older).

Mason (1996) indicated that there are four types of late-onset deafness: progressive (gradual hearing loss); traumatic (sudden loss); medically related; and surgical. According to Rothschild and Kampfe (1997), individuals who are late-deafened comprise the majority (78%) of the deaf population. These are individuals who have acquired English language skills, including oral communication, prior to hearing loss. These individuals may require extensive contact with otolaryngologists due to related problems such as tinnitus and imbalance issues. Due to increased medical needs and intensive concentration needed for basic communication, stress may also be an issue for individuals who are late-deafened. De Graff and Bijl (2002) noted that individuals who lose hearing later in life (i.e., late-onset) also experience social and emotional problems, possibly to an even greater degree than those who experience pre-lingual deafness. Barlow et al. (2007) documented increased social embarrassment and humiliation due to inappropriate social gaffes, increased anxiety, depression, higher relationship strain, and

higher rates of divorce for this population. Aguayo and Coady (2000) reported that adventitious hearing loss is devastating. The authors recognized the precarious position of this population as caught between both worlds (hearing and Deaf), needing to learn new coping styles to make social adjustments.

De Graff and Bijl (2002) noted that individuals who are late-deafened are more likely to view themselves as handicapped compared to individuals who have lost hearing earlier in life, and they may experience emotions such as loss, depression, guilt, acceptance, helplessness, and at times, social isolation. Individuals who are late-deafened do not develop a sense of belonging to the pre-lingually deaf world, nor do they feel the attachment to the hearing world where they used to belong. They are trapped between two worlds, socialized as hearing individuals now living in a D/deaf world where they must develop new coping styles to manage stress (Barlow et al., 2007). According to adaptation theory (Diener et al., 2006; Lucas 2007), there may be conditions that are too difficult to adjust, ultimately affecting the process of adaptation.

Little mental health information exists on individuals who experience late-deafness. Most research is centered on speech pathology and cochlear implant studies. There are, however, a few studies that have assessed the quality of life of individuals who experienced hearing loss. The goal of De Graaf and Bijl (2002) was to determine if there was a difference in mental health between adults who lost their hearing pre- versus post-lingually. The authors found that individuals who experienced greater difficulty with communication and lower acceptance of the hearing impairment were at greater risk for mental health issues. Individuals who lost hearing post-lingually experienced lower levels of employment than those who experienced hearing loss pre-lingually. As well,

individuals who lost their hearing post-lingually experienced secondary conditions, such as equilibrium disturbance and tinnitus, and it was the post-lingual group that reported more communication problems, a sense of handicap, and greater difficulty accepting the hearing loss. Thus, individuals who lost their hearing post-lingually were at greater risk for mental health issues. Low self-esteem and less acceptance of hearing loss were also found to be predictors of mental distress. The authors concluded that individuals with communication difficulties avoided new experiences and meeting new people, which increased isolation and decreased social support, ultimately affecting quality of life.

A study conducted by Ringdahl and Grimby (2000) focused on the health-related quality of life (HRQL) of adults with severe-profound hearing impairment. The goal of this study was to compare the HRQL of individuals with severe-profound hearing impairments to individuals with average hearing; however, this study actually focused a great deal on the intervention of hearing aids and age-related effects of normal aging, such as incontinence and dizziness. Results indicated that women with profound hearing loss experienced overall more distress than men with profound hearing loss. Individuals with severe-profound hearing impairments reported greater levels of distress than the control group for emotional control, social isolation, and energy loss and individuals with severe-profound hearing loss reported lower quality of life than others with mild to moderate hearing loss. The authors concluded that quality of life was severely compromised for those individuals with severe-profound hearing loss who also had additional disabilities.

Bat Chave (2000) and Ringdahl and Grimby (2000) conducted studies examining deaf identity and the effects of hearing loss, respectively. Each author mentioned quality

of life, and made statements about well-being, however, neither study examined well-being directly. Each study, in different ways, indirectly connected well-being to concepts such as impairment, marginalization, loss, and mental health issues. Neither study connected well-being to strengths, assets, success, or resiliency factors.

A qualitative study by Aguayo and Coady (2000) examined social and psychological effects of becoming adventitiously deaf. Eight participants (four male and four female), all Caucasian, with a mean age of 49 years and average age of onset of 32 years (range 13-40 years) participated in the study. Interviews were semi-structured and covered issues of becoming deaf and experiences about rehabilitation services.

Aguayo and Coady (2000) noted that three themes resulted from the analysis: (1) emotional trauma, including anxiety, grief, and mourning associated with coping with enduring deafness; (2) oppression, exclusion, and isolation within the family; and (3) general oppression, exclusion, and social isolation, including embarrassment, fear, inadequacy, social incompetence, social neglect, shunning, discrimination, taunting, and ridicule. All participants attempted to avoid very painful social situations. The coping strategy of “avoidance” led to additional social isolation and a lack of opportunity to improve overall coping strategies and social skills. There was general dissatisfaction with rehabilitation services which was attributed to the “revolving door” phenomenon, which is a piece-meal approach to providing services, rather than serving through a holistic approach, resulting in a on-going stream of consecutive applications for services. Unfortunately, in this case, services consisted of medical assistance and little psychosocial support.

Another qualitative study conducted by Barlow et al. (2007) examined the views of individuals who were late-deafened. Eight participants, (the majority of whom were male ($n=6$) and whose ages ranged from 33 to 60 years), were interviewed to determine the experience of becoming deaf and views on rehabilitation services. The three main themes discovered were emotional trauma including, anxiety, grief, shame, embarrassment, and inadequacy; oppression, exclusion, and social isolation from family; and general social isolation including oppression, exclusion, and lack of social support.

Specific details related to the themes found by Barlow et al. (2007) included problems that resulted in a lack of employment, lack of social and leisure opportunities, and failure of rehabilitation professionals to understand the bigger picture, which included the social and emotional problems that accompany hearing loss. Most participants had experienced varying negative emotions associated with hearing loss including: anger, frustration, depression, thoughts of suicide, and low self-esteem. Unfortunately, according to adaptation theory (Diener et al., 2006), some adults may never adapt to hearing loss due to contextual factors, such as age of onset, severity of disability, and a lack of social and professional support to develop coping strategies needed to acquire the desired quality of life.

In sum, research on individuals who experience adventitious hearing loss shows that it is a devastating, chronic condition which may hinder adaptation, as noted by the lasting effects such as higher divorce rates (Aguayo & Coady, 2000; Barlow et al., 2007), overall distress (Ringdahl & Grimby, 2000) and increased depression and anxiety (Barlow et al., 2007). Late deafness affects everyone in the family, friends, and even social and professional acquaintances. Barlow et al. (2007) pointed out that, when

seeking assistance, individuals who are late-deafened often focus on psychosocial issues, such as health and well-being, yet providers are focused on communicative function, such as restoring language skills. In keeping with the medical model, adaptation to chronic conditions is difficult and time consuming. Resources and support are needed in the form of rehabilitation to develop helpful coping strategies in order to manage the loss and stress involved. Resources, however, must focus on those issues that improve quality of life and provide interventions where change will be meaningful.

Adaptation Theory

According to Diener et al. (2006), the foundation of adaptation theory is the Hedonic Treadmill (Brickman & Campbell, 1971) which purports that one's emotional experiences are self-regulated by the body's homeostatic system, always keeping systems in balance. In other words, no matter how much pleasure or pain one experiences, ultimately, this homeostatic system will eventually return to neutral or the original emotional set point. Brickman et al. (1978) examined happiness in individuals with paraplegia compared to lottery winners. Participants consisted of 29 individuals with spinal cord injury, 22 lottery winners and 22 individuals in a control group. The mean age of participants with paraplegia was 23 years, 44 years for lottery winners, and 46 years for the control group, but there were no statistically significant differences among the groups ($F(2,65)=29.12, p>.001$); men outnumbered women in each group, however, there were no significant gender differences among groups. In addition to a demographic survey, participants were asked open ended questions about life changes since their accident or winnings, and questions on happiness and everyday pleasures.

The results of Brickman et al. (1978) demonstrated that lottery winners took pleasure from winning, but found less pleasure in ordinary events than the control group. In keeping with adaptation theory, one extremely exciting event can appear to diminish the rating of less exciting events, by comparison. However, over time it is expected that this effect would eventually diminish. Individuals with paraplegia rated themselves significantly less happy than controls on ordinary daily events. Individuals with paraplegia did not take more pleasure in day to day events, but demonstrated pleasure in reminiscing about the past, rating their past happier than the control group. Although the authors offered most of the results as evidence in support of adaptation theory because lottery winners were not significantly happier than nonwinners, clearly the group of individuals with paraplegia was not taking as much pleasure in daily events as they had in the past. Adaptation to a chronic condition or disability may be completely different than adapting to winning the lottery.

Diener (1984) also advocated that when an individual experienced a life altering event, over time the person will adapt to the situation and return to his or her original set point of happiness and emotional state. Diener (2000) suggested that as people experience specific unpleasant events in life, there is a tendency to regress toward the mean of well-being. In other words, after a specific unpleasant life experience an individual's assessment of well-being tends to return to the original setting. Likewise, after favorable experiences, one's interpretation of life satisfaction tends to return to the set point. That is not to say that an individual's set point cannot be ultimately raised or lowered, but rather adaptation occurs on an individual level. In other words, after a

traumatic event, given enough time, an individual will adapt to his or her new way of life and return to his or her original set point of well-being.

Diener et al. (2006) however, revised the theory of adaptation, explaining that there were five notable changes. First, research demonstrated that most individuals are happy a majority of the time. An individual's set points are no longer considered to be neutral in that, after positive or negative experiences beyond what is customary to that person, happiness does not automatically return to the original neutral setting as originally conceived. Diener et al. stated that most people are above this neutral set point on well-being. Second, set points are unique; people are definitely original in how they negotiate and respond to stimuli. Diener et al. concluded that different people will most certainly have different set points and experience well-being in different ways. Third, people have multiple set points of well-being related to different types of well-being (e.g., positive and negative emotions) and these different components of well-being can change in different ways. Contrary to former belief there is no one single "global" concept of well-being. In addition, different types of well-being can adjust in different directions and at different rates, at the same time. Examination of types of well-being demonstrated that life satisfaction is most stable over time, followed by negative emotion, then positive emotion. Fourth, the most contentious and in contrast to Brickman and Campbell (1971), Diener et al. documented that long-term change in happiness does occur and adaptation may be event dependent. Fifth, in contrast to the original theory of the hedonic treadmill, Diener et al. found that there is variability in adaptation, and also the rate at which it occurs. For example, over time some individuals may never adapt to a life changing experience, permanently affecting well-being.

In a longitudinal study, Lucas (2007) examined adaptation in individuals with long-term disability. Lucas proposed that just as our physical perception of hot and cold protects our bodies from being scalded and frozen, homeostatic regulation protects our bodies from prolonged, heightened emotional states. However, from a comprehensive review of the literature, Lucas documented that the evidence in support of adaptation was mixed. Two national samples (1: $N=675$; 2: $N=272$) of participants with long-term disabilities were surveyed about psychological symptoms, well-being, life satisfaction, extent of disability, length of disability, and demographic information.

Lucas (2007) showed that participants who became disabled demonstrated little ability to adapt over time, indicating that an acquired disability (i.e., hearing loss) can permanently alter well-being. In addition, having a more severe disability was correlated with less well-being. Although individuals may be more likely to adapt to a one time event, they may be less likely to adapt to conditions that are degenerative or change over time. Lucas also felt that there might be some “psychological processes” that could affect adaptation. If one could alter emotional reactions to stimuli, it could change how one thought about events that occurred, or change the perception of the situation. One example of such a psychological process could be coping. Lucas concluded that adaptation is not inevitable, and that disability can greatly affect happiness and well-being.

Kashubeck-West and Meyer (2008) demonstrated that the revised theory of adaptation (Diener, 1984, 2000; Diener et al., 2006) held with the population of individuals who are late-deafened. Results from this study demonstrated that women who were late-deafened had significantly lower psychological well-being than that of the

general population. Individuals with CID, specifically late-deafness, can be challenged to a point that adjustment to new environmental stressors may not be possible, and therefore adaptation does not fully occur, ultimately affecting psychosocial outcomes, such as life satisfaction and psychological well-being.

It is now believed that adaptation is dependent upon a number of factors that differ across people, situations, and time. People experience life events in unique ways and cannot be expected to return to premorbid states of being. Over time and through research, Diener (1984; 2000) and Diener et al. (2006) came to realize that all injuries are not perceived equally and all people do not adapt or adjust to injury or illness in the same way, or at the same rate. Most importantly, it is now believed that not all people, given time, will adapt to all situations and circumstances. Some injuries or illnesses are considered too chronic and too challenging for full adaptation.

Adaptation to Disability

Chronic Illness and Disability (CID) is defined as cognitive, physical, sensory, or psychiatric disability, present at birth or acquired later in life that inhibits daily living (Livneh & Antonak, 2005). Late-deafness is considered to be a chronic condition that can be degenerative, depending upon the diagnosis. Late-deafness is unique because it is hearing loss that is adventitious and therefore will require psychosocial adaptation, unlike other disabilities acquired prior to birth or early in life.

Adaptation to adventitious hearing loss is affected by contextual and situation variables; therefore the theory of adaptation (Diener et al., 2006) and the transactional model of coping (Lazarus & Folkman, 1980, 1984) apply to this population, as the premise of each approach is based on a situational and contextual model. Individuals with

late-deafness are subject to constant adjustment to different social situations and contexts, which requires a high degree of adaptation and the ability to cope with ever-changing variables.

According to Livneh and Antonak (2005) and Livneh and Cook (2005), individuals with CID usually face an inordinate amount of stress, which in turn affects well-being, autonomy, vocation, and economic viability. The onset of chronic conditions causes medical and emotional crises, and can eventually cause pathological conditions, such as posttraumatic stress disorder. Adventitious, chronic conditions often require mourning of the loss of previous physical or cognitive functioning and permanent disabling conditions can be a constant psychological reminder of the CID, which can generate issues with self-concept and stigma from society at large. Quality of life is the goal of rehabilitation after the onset of CID, and it is often dependent upon a symbiotic person-environment relationship and a sense of control over one's environment. However, 80% of the most common causes of death in the U.S. are related to a CID, making the person – environment relationship rather tenuous and stressful at best for individuals living with CIDs (Livneh & Cook, 2005).

Change is always difficult, but adaptation to CID is a lengthy and emotional process, consisting primarily of six phases or reactions (Livneh, 2001; Livneh & Antonak, 1997, Livneh & Antonak, 2005; Livneh & Cook, 2005; Livneh, Lott, & Antonak, 2004). It is not necessarily the phases of adaptation that are most important, but rather the reactions an individual experiences. Although all researchers do not agree that the phase models are valid or linear, the more common reactions following CID include anxiety, denial, depression, anger, acceptance and adjustment.

The most common emotion first experienced after the onset of CID is anxiety, generally from shock, physical and/or emotional (Livneh, 2001). Anxiety can come in the form of both a physical and emotional reaction to the condition, including shortness of breath, panic and even a heart attack. The second reaction is denial, which is usually an unconscious reaction to negotiate anxiety. Next is depression, which is in response to the reality of the permanency of the condition. Anger usually follows depression, which is a manifestation of the depression. Anger can be turned inward (e.g., guilt) or outward towards others (e.g., blame or aggression). The last two reactions are acknowledgement and adjustment. Acknowledgement signifies reorientation and incorporation of the condition in a positive self-concept. This includes changing values and beliefs in life. Last, adjustment is an on-going process (especially for someone with a degenerative condition), defined by positive self-worth and marked by the continued pursuit of future personal, social, and/or professional life goals and the successful negotiation of obstacles.

Contextual variables such as the environment, demographics, and degree of disability are considered to be mediating, moderating and interacting variables that affect the reaction and adaptation to CID (Livneh, 2001; Livneh & Wilson, 2003). Contextual variables are both internal and external to the individual and include: type and severity of condition, limitations, course of condition (stable, degenerative, episodic), duration of condition, age of onset, visibility, age, gender, sex role identification, ethnicity, socioeconomic status, partnered status, education, coping style, beliefs, values, environmental barriers, economic support, and living conditions, to name a few. Ultimately, successful rehabilitation is proper negotiation of internal and external factors leading to improved quality of life, which includes well-being and life satisfaction. In

sum, adaptation to the current set of conditions, as it pertains to psychological well-being, is of the utmost importance for individuals with adventitious deafness.

In efforts to manifest a working model of adaptation, Livneh and Antonak (1990) investigated the empirical structure of reactions to CID. First, 300 items were extracted from the literature and administered to experts in the field. Content validation continued until the list contained 90 items for the inventory. The Relations to Impairment and Disability Inventory (RIDI) was organized into eight subscales. Two hundred and fourteen participants with various disabilities were recruited; the mean age was 43.9 years ($SD = 17.9$), there were 80 females and 134 males, 94% were Caucasian, and most were high school graduates.

Exploratory factor analysis was conducted by Livneh and Antonak (1990) to examine the data. An orthogonally-rotated seven factor principal component solution accounted for 44.3% of the variance. However, the factor analyzed scale only marginally improved on the original eight factor scale and it diminished the clinical integrity of the original scale; therefore, the original eight factor scale was examined in further analyses. Internal consistency was examined for both the original eight scales and the seven factor analyzed scales. Both generated acceptable alphas at .78 and higher for the original scales, and .70 and higher for the factor analyzed scales. Evidence of content and construct validity for the scales was also provided through the inventory development process. Evidence of criterion-related validity was provided through correlation with a similar scale that measured acceptance of disability. It was concluded that the eight factor scale (shock, anxiety, denial, depression, internalized anger, externalized hostility, acknowledgement, and adjustment) had adequate psychometric properties and was valid

for use with the CID population. Livneh and Antonak (2003) continued the exploration of CID through the examination of predictors and mediators of psychosocial adaptation (see coping section for a full review).

Livneh, Lott, and Antonak (2004) conducted a cluster analysis to examine patterns of adaptation to CID. Over the years, patterns in disability-specific coping strategies have been detected through research, such as engagement coping (problem focused coping and emotion focused coping), disposition-type coping styles, disengagement coping, and denial. Participants were 121 students from two universities, 69.4% women, with an average age of 31.5 years ($SD = 12.1$) and 80.7% were Caucasian. An array of disabilities was reported, including 17.4% with sensory impairment, which included hearing loss. In addition to the demographic survey, the battery included measures on psychosocial adaptation to CID, coping, perceptions of control (related to health and illness), perceived quality of life, functional limitations (physical/environmental), and spiritual well-being.

Cluster analysis of the Livneh et al. (2004) data revealed three groups: 1) adaptive (59 participants), 2) non-adaptive (22 participants), and 3) intermediately adaptive (39 participants). Participants in the adaptive cluster were the best adapted to their condition, had lower scores on disability-related inventories and higher scores on measures of psychosocial adjustment. These individuals used more problem focused coping techniques, perceived more control over life, and reported a higher quality of life and life satisfaction. Individuals with cognitive, learning, and physical-sensory conditions were found to be in this group. The non-adaptive group demonstrated higher scores on disability-related inventories, and lower scores on measures of psychosocial adjustment.

These individuals used more disengagement coping strategies and reported a higher external locus of control. They also reported lower levels of quality of life and life satisfaction. Individuals with psychiatric-emotional conditions were found to be in this category. The last cluster was the intermediately adaptive group. This group was in between groups one and two in terms of functioning. Specifically, this group used denial, preferred cognitive behavioral coping strategies, and viewed their health neither in their control nor the control of others. They were viewed as moderately successful and perhaps would benefit from and be amenable to intervention. Research has demonstrated that the individuals with CID in this group may have additional conditions such as chronic pain, alcoholism, or serious psychiatric conditions.

Hearing loss is considered to be a CID and adaptation to the condition varies based on factors such as education, age of onset, age, and severity and chronicity of the impairment (Livneh & Antonak, 1997). Livneh and Antonak (1997) reviewed the literature and reported that: severity of hearing loss was related to maladaptation; overall adjustment was directly related to age at onset and chronicity of the impairment; and ineffective communication strategies were related to loneliness, depression, anxiety and poor adaptation. One variable related to outcomes was high levels of family support. Family support appeared to act as a buffer for older adults (ages 60-92) with hearing loss, who resided in the community. The authors concluded from the review that individuals with a hearing loss tend to experience higher rates of depression, anger, and anxiety compared to the general population. Maladaptation may be related to poor communication strategies, and poor education, but family support can assist with

successful adaptation. The authors also advocated for the use of problem focused coping, as it assists with more successful adaptation for adults with hearing loss.

Although there are conflicting results throughout the research on which variables are true predictors of psychosocial outcomes, such as adaptation to disability and quality of life, there is a preponderance of evidence that age of onset and severity of disability stand out as consistent predictors in CID research. In addition, coping has been identified as a predictor, mediator and moderator in CID research. Although not as well examined as in the predictor role, there is evidence that coping mediates relationships between predictors and psychosocial outcomes for individuals with CID, including individuals who have experienced hearing loss. This dissertation study will move a step beyond adaptation and examine psychosocial factors post-adaptation. This study will examine a number of relationships, including the potential mediating effects of coping on the relationship between adaptation to disability and psychological well-being.

Coping and Chronic Illness & Disability

Coping refers to the thoughts, actions, and behaviors in which one engages to deal with stressful situations, to manage and/or negotiate personal or environmental crises (Folkman & Moskowitz, 2004). According to Lazarus (1993), coping can be conceptualized as a process which is expected to change over time in reaction to the context of the situation in which the crisis occurs. Given that coping is used to negotiate stressful situations, individuals with CIDs, including hearing loss, require these coping skills to manage chronic and fluctuating conditions. CID conditions require great flexibility in coping and adaptation to the social, psychological, physical and environmental challenges due to the demands placed upon the individual. Yet, according

to adaptation theory (Diener et al., 2006), certain adventitious conditions may be too adverse to integrate into one's self-concept, causing permanent changes in satisfaction and well-being. Livneh and Wilson (2003) examined the relationship between coping and adaptation to CID and determined that coping contributes significantly to adaptation for individuals with CID.

Coping has evolved since Lazarus' original work in 1966. Since that time, coping has undergone three major movements: (1) the psychodynamic perspective; (2) the transactional perspective; and (3) a re-examination of personality and coping (Suls, David, & Harvey, 1996).

The psychodynamic perspective presented coping as a basic defense mechanism. An individual's response to stress was thought to be as unconscious as other ego defenses. Utilizing ubiquitous mechanisms, such as repression and denial, an individual would unconsciously alter the perspective of a given situation. How successfully one coped with a situation determined the level of sophistication or development of one's ego defenses. According to Sulz et al. (1996) there are four levels of ego coping: 1. Psychotic; 2. Immature; 3. Neurotic; and 4. Mature. Only mature coping was considered to be healthy and functional, resulting in desired outcomes consistent for the given situation.

Late in the 1960's the psychodynamic approach began to lose traction in the research community. Due to the conflicted nomenclature of the time and the lack of empirical data to support the theoretical approach, researchers became weary of the psychodynamic perspective of coping and began to focus on a more pragmatic approach. Thus the transactional perspective on coping emerged. The transactional perspective is associated with works from Lazarus (1966), Folkman and Lazarus (1980) and Lazarus

and Folkman (1984). The transactional perspective on coping emphasizes the process by which coping occurs and related cognitive factors. The transactional process refers to the interaction between the individual and the environment, with a focus on the process rather than personality traits or ego defense mechanisms.

According to the transactional perspective there are two main coping approaches, emotion focused coping and problem focused coping (Suls et al. 1996). Emotion focused coping involves a change in perspective or a re-defining of a situation, allowing an individual to emotionally adapt to the new crisis or situation. Problem focused coping is more action oriented, in which a plan may be developed, but at the very least steps are taken to negotiate the crisis, allowing the individual to adapt to the situation.

There are two decision strategies used to determine the type of coping approach most useful for stressful situations, primary and secondary appraisal. Primary appraisal is an evaluation of the situation to determine the cost-benefit analysis of what one has to lose or gain. Secondary appraisal allows for surveying available resources and options. If it is determined that a situation can be influenced, problem focused coping will be used. However, if the situation is considered “fixed” or beyond influence, emotion focused coping will be utilized to decrease distress. How one perceives the situation determines the approach taken to cope with the crisis. The transactional approach (sometimes called the state or situational approach) is cognitive and is directly related to the situational factors that occur from crisis to crisis; the variability in individual response is increased, negating psychodynamic theory, which based prediction of coping on personality factors (Cohen & Lazarus, 1979).

The transactional approach emphasizes the process of coping rather than one's disposition or personality traits. This approach focuses on the coping behaviors or cognitive and behavioral changes made to adapt to the situation and context at hand. Suls et al. (1996) cited several early studies that demonstrated that coping is more inconsistent from situation to situation or from one context to another, exemplifying that traits have poor predictive quality. This variability was found to be evidence that states or situations, rather than personality or traits, were predictive of coping behavior.

Suls et al. (1996) documented that by the mid to late 1980s, the field of personality and coping was experiencing a resurgence of interest. This resurgence was due to the fact that personality factors proved to be about as predictive of coping as other situational strategies. Each accounted for about 30% of variance of coping behavior (Funder & Oser, 1983; Kenrick & Funder, 1988). In addition, the growing influence of the Big Five personality factors, Neuroticism, Extroversion, Openness, Agreeableness, and Conscientiousness, had an influence on how researchers examined coping. Suls et al. documented that the renewed interest in personality factors as predictors of coping came from the ability to empirically validate models and the fact that situations alone did not account for all of the variability in coping.

Some of the more current research methods in coping include an evaluation of both personality and situational factors over time (Suls et al, 1996). Coping strategies are considered to be adaptive and facilitate the management of extraneous stress. Another approach to coping includes the future-oriented proactive approach (Folkman & Moskowitz, 2004). The focus is on how an individual anticipates future problems or

concerns and prepares for them. Other models of coping are religious coping and positive coping (Folkman & Moskowitz, 2004).

There appear to be two main camps of thought on coping, one that views coping as a process in which one changes and adapts to the context in which the crisis occurs, and a second camp that views coping as more of a stable personality characteristic. According to Lazarus (1993), the concept of coping as a personality characteristic definitely stemmed from Freudian theory of personality development. In the past this view was more conceptual and therefore more difficult to measure; however, with the advent of the Big Five and advancement of personality models, it is currently more measurable.

Coping as a process is more fluid, changing according to the situation or context. As a crisis evolves from acute stress to resolution or into chronic stress, coping changes according to the demands of the context. Lazarus (1993) believed that coping is foremost a cognitive process, coupled with behavioral action to relieve stress.

Folkman and Moskowitz (2004) and Lazarus (1993) explained that their model of coping provides two approaches to negotiate stress, emotion focused coping (EFC) and problem focused coping (PFC). Folkman and Moskowitz (2004) described emotion focused coping as negotiating or changing negative feelings related to a situation or event, and problem focused coping as negotiating the issue causing stress by taking some action. Although emotion focused coping has not always been viewed as functional as problem focused coping, in certain situations it can be a more productive coping choice, such as situations of terminal illness, where there is limited degrees of influence. Problem

focused coping is an active process in which one attempts to change the situation or context in which the crisis occurs, and is more widely accepted in the Western culture.

Problem focused coping (PFC) is a self-directed, active approach to address the issue, where the focus is to change the person-environment relationship. Through some action, change is expected to mitigate the stress experienced by the individual in the situation. This may include gathering information and formulating a plan (of action) (Suls et al., 1996). Emotion focused coping (EFC) is a more passive approach to dealing with stress, focused on the negative emotion related to the situation. The purpose is to change how one is attending to the environment (with vigilance or avoidance), or change the meaning or perception of what occurred. In other words, if an insult has been received, finding a way to make it more palatable, such as excusing the other person's behavior due to illness, would be a way to change the perception of what occurred. In certain situation where one has little control over the circumstances, reframing the situation can be an advantage. As mentioned above, Western culture strongly prefers taking action, and therefore prefers PFC over EFC; however, there are situations in which taking action can be counter productive, adding to an already stressful situation (Lazarus, 1993).

Folkman and Moskowitz (2004), in a comprehensive review of cognitive coping approaches, provided further information on models of coping slightly different from Lazarus (1993). Regardless of the model, Lazarus (2006) continued to advocate that coping is a cognitive and behavioral process utilized to negotiate stress that exceeds the resources of the individual. Lazarus clarified that problem focused coping and emotion focused coping are not to be viewed as competing functions, but perhaps as primary and secondary functions of an individual, dependent upon the situation. Furthermore, as the

flexibility of the situation is analyzed, the predicted outcome often determines the approach to coping, which is either problem or emotion focused.

Aldwin and Yancura (2003) reviewed the stress and trauma literature, which encompassed coping. Their review of cognitive coping styles (i.e., Lazarus and Folkman, 1980, 1984) revealed a five factor model of coping including problem focused coping, emotion focused coping, social support, religious coping, and meaning making coping. Additionally, coping was noted as both a mediator and moderator in various research designs. Meaning-making coping, the most recent style, is a different type of coping (compared to emotion or problem focused), and is a way to redefine the meaning of a situation based on beliefs and values. In 2004, Folkman and Moskowitz advocated the use of a model of coping with a four factor structure including: problem focused coping, emotion focused coping, social coping and meaning focused coping.

Within the literature on Chronic Illness and Disability (CID), Livneh and Antonak (2005) supported the situational or transactional theory of coping, stating that coping fluctuates over time and is fluid to meet the demands of the situation or context. In addition, the authors documented that for the CID population, which includes hearing loss, passive approaches to coping such as avoidance or denial, proved to be less successful than approaches that are action oriented or goal oriented, such as problem solving. More active approaches are correlated with higher levels of well-being and with more successful adaptation to disability

Coping and disability.

In a review of the CID literature, Livneh and Cook (2005) documented that a main focus of the literature was on the relationship between coping strategies and

psychological or psychosocial outcomes. Among the most commonly investigated disabilities were cancer, cardiac disease, traumatic brain injury, epilepsy, multiple sclerosis, spinal cord injury, Parkinson's, amputation, diabetes, pain conditions, psychiatric conditions, and cognitive disorders. The authors also recognized coping for its gradually increasing role as both a predictor and moderator of psychosocial adaptation, demonstrating the importance of coping strategies in the lives of individuals with CID. The authors also agreed that although active coping strategies (e.g., problem focused coping) have been associated with better adaptation to disability, the use of disengagement type strategies (e.g., avoidance coping) have their time and place and can be useful early on in certain crises or in situations where little control can be exerted.

Livneh and Antonak (2003) examined predictors and mediators of psychosocial adaptation to CID. Hypothesized predictors were: duration of condition, age of onset, functional limitations, impact of pain, side effects of medication, extent of disability, visibility of condition, and self-concept, to name a few. This study examined coping as a unique predictor and mediator of adaptation to disability. Participants of the study were 121 students from three universities, 84 women and 37 men, with an average age of 31.5 years ($SD = 12.1$) and 80.7% were Caucasian. An array of disabilities was reported, including 17.4% with sensory impairment, which included hearing loss. In addition to the demographic survey, the battery included measures on anxiety, depression, functionality (physical/environmental), visibility (of disability), psychosocial adaptation to CID, and coping.

Preliminary analyses by Livneh and Antonak (2003) revealed positive correlations between age and functional limitations, and education and problem focused

coping. Gender correlated with emotion focused coping (EFC), such that women scored higher than men on use of EFC. Last, life satisfaction was negatively related to depression and anxiety.

Livneh and Antonak (2003) conducted hierarchical multiple regression analysis to examine the relationship of coping and psychosocial adaptation to disability. Only depression was initially found to predict adaptation. However, in the final step of the regression, problem focused coping (PFC) explained variance in both outcomes—adaptation to disability and life satisfaction, identifying PFC as the most powerful predictor for adjustment to disability and life satisfaction. Disengagement coping contributed negatively to the explained variance of adjustment, predicting poor adjustment to disability. Emotion focused coping contributed to the variance of life satisfaction, predicting higher life satisfaction, but failed to predict adjustment to disability.

Based on Baron and Kenny's (1986) conditions for mediation, the Livneh and Antonak (2003) data revealed that of the three coping strategies tested, disengagement was the only identified mediator. Disengagement coping was found to mediate the relationship between depression and adjustment to CID. The authors felt the lack of results regarding mediation may have been due to the selection of the sample, a high functioning college population, with a relatively moderate degree of functional limitations, and the no-to-low degree of severity/visibility of condition. This sample may have blended well in their environment, thus reducing social and environmental stress, resulting in less demand for coping strategies and easier adaptation.

Hallberg and Carlsson (1991) examined the relationship between audiological and psychological factors of hearing impairment and perceived handicap. Participants were 62 individuals with varying hearing loss, 37 males, and 25 females, with a mean age of 52 ($SD = 5.7$). In addition to a demographic survey, instruments administered to participants included an interview on hearing difficulties, perceived hearing handicap, and coping strategies. Interview data were coded and grouped into two general categories, “to control the social scene,” which included verbal and non-verbal approaches to communication/coping strategies in attempts to maintain interaction, and “to avoid the social scene,” which included approaches to communication that were considered maladaptive and considered to be attempts to avoid and minimize disability.

Hallberg and Carlsson (1991) conducted stepwise regression analysis and revealed that four predictors of perceived handicap explained 54% of the variance: maladaptive coping behavior explained 26% of the variance, pure tone average in the better ear explained 18%, to control the social scene explained 4%, and years of education explained an additional 6% of variance. This demonstrated that both psychological variables (i.e., coping) and audiological variables were significantly related to perceived handicap.

More specifically, use of verbal and non-verbal coping strategies correlated significantly with perceived handicap. Surprisingly, adaptive communication was correlated with an increase in perceived handicap; it is supposed to be constructive and aid with coping. Hallberg and Carlsson (1991) acknowledged that in certain situations, active coping skills, such as positioning for improved hearing and asking for repetition, may focus more attention on the hearing loss and therefore increase one’s own perception

of handicap. Handling communication can be stressful for individuals with hearing loss and the choice of coping strategies must be fluid, changing from situation to situation to meet the demands of the context.

Gomez and Madey (2001) conducted a study examining how psychosocial factors of hearing loss and perceived strategy effectiveness (of coping) affected the use of adaptive and maladaptive coping strategies in older adults. Participants were 33 men and 28 women from a local clinic, with a mean age of 75.5 years ($SD= 6.95$). In addition to a demographic survey, participants were administered measures of adaptive and maladaptive coping strategies, perceived effectiveness of coping strategies, physical hearing loss, perceived hearing loss, and psychosocial variables (anxiety about aging, adjustment to hearing loss, perceived social support, and attitudes of others).

Results from Gomez and Madey (2001) demonstrated that psychosocial factors were far more important than audiological factors in predicting coping behavior in older adults with hearing loss, as preliminary analysis revealed that psychosocial variables were correlated with coping, especially maladaptive coping strategies. Regression analysis revealed perceived strategy effectiveness (or the degree to which the individual feels his or her strategy of coping is having the intended result) affects choice of strategy, such that perceived effectiveness explained 65% of the variance of use of maladaptive strategies, but only 38% of adaptive strategies. Obviously, in older adults the perceived effectiveness of coping strategy largely predicts the choice in coping strategy in order to handle the stress of hearing loss. It is clear that individuals with hearing loss may not view maladaptive strategies as poorly as others (i.e., researchers).

Using the Ways of Coping Questionnaire (WoCQ: Folkman & Lazarus, 1988, Lazarus & Folkman, 1984), Andersson and Hagnebo (2003) examined anxiety and coping strategies of individuals with hearing loss. Participants were 94 individuals from the Swedish Hard of Hearing Association, with a mean age of 62 years ($SD = 16$), 66% were female, 56% were retired and 28% had retired due to hearing loss. In addition to a demographic survey, and the WoCQ, a measure on discomfort from hearing loss and a measure on anxiety were sent to the participants to complete.

Preliminary analysis from Andersson and Hagnebo (2003) revealed that the most commonly endorsed coping responses from the WoCQ were planful problem solving (making a plan of action) and self-controlling (keeping feelings to self). Multiple regression analysis revealed that the WoCQ subscales in combination accounted for 46% of the variance in anxiety sensitivity, with escape/avoidance (I wished the situation would go away) accounting for the majority of variance.

Andersson and Hagnebo (2003) demonstrated that individuals with hearing loss tend to use active strategies of coping; however, when dealing with anxiety, there is a tendency to use avoidance coping. Andersson and Hagnebo (2003) explained that hearing loss not only affects the ability to orient in relation to sound, but many other areas of life such as social dimensions (risk of ridicule and misunderstanding) and loss of daily living skills (such as attending to basic warning sirens), in addition to the fear and anxiety of complete loss of hearing resulting in total deafness. Individuals with hearing loss may have good reason to have heightened levels of anxiety, based on basic and social loss of function.

Livneh and Antonak (2005) supported the use of the situational theory of coping (Folkman & Lazarus, 1988; Lazarus & Folkman, 1984) in adaptation, stating that coping changes over time and is fluid to meet the demands of the situation or context. In addition, the authors documented that for the CID population, passive approaches to coping, such as avoidance or denial, proved to be less successful than approaches that are action oriented or goal oriented, such as problem solving. More active approaches are correlated with higher levels of well-being and more successful adaptation to disability. The authors documented that coping plays several roles related to the lives of individuals with disabilities, whether it be as a predictor, mediator or moderator of psychosocial outcomes.

Just as Lazarus (1993) discussed the stages of adjustment during stress and how adaptation and coping changes, Livneh and Antonak (2005) similarly described the reaction and adaptation to CID as: 1. Shock, 2. Anxiety, 3. Denial, 4. Depression, 5. anger/hostility, 6. Adaptation, and 7. Adjustment. Livneh and Antonak (2005) viewed coping as a combination of both trait and process, a view that has become more popular, but is also quite challenging and time consuming to study. However, the authors acknowledged that for the CID population, passive approaches to coping, such as avoidance or denial, proved to be less successful than approaches that were action oriented or goal oriented, such as problem solving, which has been correlated with greater well-being and more successful adaptation to disability.

In general, coping fluctuates over time and has to be fluid to meet the demands of the situation or context, allowing for adaptation (Livneh and Antonak, 2005). Folkman and Moskowitz (2004) documented that a majority of studies demonstrated that although

in the short-term, disengagement types of coping were helpful, in the long-term they were associated with greater distress. More active forms of coping proved more useful overall, which is especially true for individuals with CID, including hearing loss (Folkman & Moskowitz, 2004; Livneh & Antonak, 2005).

The role of coping.

The coping literature is vast and the examples range from coping as a predictor, mediator or moderator of physical health, as shown in research on rheumatoid arthritis, cancer and cardiac care (Aldwin & Yancura, 2003; Dekkers et al., 2001), to mental and emotional health such as PTSD, depression and anxiety (Aldwin & Yancura, 2003; Billings & Moos, 1981, 1984; Coyne, Aldwin & Lazarus, 1981; Endler, 1988; Perlin & Schooler, 1978), and to positive psychology, such as psychological well-being (Heppner et al., 1995).

Through a comprehensive review of the stress and trauma literature, Aldwin and Yancura (2003) determined that there are five possible models of the relationship between coping and health outcomes, including direct effects, such as those found in studies on PTSD, cardiovascular reactivity, immunity, and disease outcomes; mediated effects, such as those found in studies on neuroendocrine issues, immunity, and disease outcomes; moderated effects, which were more questionable, but were found in studies on immunity; contextual effects, found in studies on PTSD and disease outcomes; and spurious effects, found in studies on cardiovascular reactivity. Most of these models were supported in studies that used self-report methods. For example, Pisarski, Bohle, and Callan (1998), in a study on stress of shift workers, specifically established coping as

both a predictor of physical and psychological outcomes, as well as a mediator of the relationship between stress and physical and psychological outcomes.

Lazarus (1993) specifically stated that coping mediates the relationship between stress and the emotional outcome. Folkman and Lazarus (1988a) determined that coping strategies mediated the relationship between stress and emotion, such that when problem focused coping was utilized, emotion was rated as less negative (or more positive). Problem focused coping has been demonstrated as a successful mediator of stress on psychosocial outcomes. Heppner et al. (1995) stated that coping was well recognized as a mediator of the relationship between stress and physical and psychological health, including psychological well-being. Endler and Parker (1990) and Parker and Endler (1992) asserted that coping is a major contributor to one's physical and psychological well-being as an established mediator of stress and psychological or psychosocial outcomes.

Livneh and Wilson (2003) examined coping strategies as predictors and mediators of adaptation to CID, including hearing loss. Examination of the literature indicated there were two main sets of predictors of adaptation: static variables (such as demographics, age of onset, and severity of disability) and personal characteristics (such as functional limitations, anxiety and depression). The participants of this study were 84 women and 37 men from three universities. Over 30 different disabilities were reported by participants, including physical, physiological, sensory, psychiatric, learning, neurological and other. Among other instruments measuring anxiety, depression, functionality, visibility of disability, and adaptation to CID, the abbreviated Coping With Problems Experienced inventory (COPE; Carver, Scheier, & Weintraub, 1993; 1989) was

used to measure participant's ability to cope with the nature of their particular disability. Participants were asked to consider how they handled stress related to their specific disability, injury or illness.

Livneh and Wilson (2003) factor analyzed the data, which resulted in a three factor model accounting for 46.24% of the variance. The final three coping factors were: avoidance coping, which accounted for 23.16% of the variance; problem-focused coping which accounted for 14.19% of the variance; and emotion focused coping, which accounted for 8.89% of the variance. The authors utilized this structure for further analyses.

Preliminary analysis of the Livneh and Wilson (2003) data revealed that age was positively correlated with functional limitations, educational level was positively correlated with PFC, and gender was correlated with EFC, such that women scored significantly higher than men for use of EFC. Through hierarchical multiple regression analysis it was revealed that PFC most significantly contributes to adaptation or adjustment to disability, accounting for 10% of the variance for adaptation to CID. Disengagement or avoidance coping was found to be negatively related to adaptation to CID, accounting for 3% of the variance. Last, EFC and PFC correlated with overall life satisfaction, accounting for 2% and 4% of the variance, respectively. Examination of the data revealed that disengagement/avoidance was a mediator between depression and adjustment to disability, and between anxiety and life satisfaction.

Although the Livneh and Wilson (2003) data demonstrated that coping strategies had more unique influences on adaptation to CID than mediating effects, there were numerous lessons to take away, including changes that may demonstrate more powerful

mediating effects in future studies. First, once disability related variables were controlled for, PFC was the greatest predictor of adaptation to CID and life satisfaction, accounting for 10% and 4% of the variance, respectively. To improve evidence of coping strategies as strong mediators of the adaptation process, numerous changes were suggested, such as, using a discrete population (such as individuals who are late-deafened) rather than including individuals with various CID, avoiding a university population, recruiting a more diverse sample, avoiding single item measures for complex concepts, using instruments that are normed and standardized and utilizing a longitudinal design.

Many parallels can be drawn between the Livneh and Wilson (2003) study and this dissertation. Specifically, coping was analyzed as a mediator of the relationships between three predictors, perceived severity of disability, adaptation to disability, and age of onset of disability, and the psychosocial outcome, psychological well-being. Based on the theory of adaptation, individuals who have CID may find certain disabling conditions which are too stressful to adapt to, such that they do not return to prior levels of well-being, as demonstrated by Kashubeck-West and Meyer (2008).

Kashubeck-West and Meyer (2008) found that women who were late-deafened had significantly lower levels of psychological well-being, compared to the general population, establishing that the revised theory of adaptation holds true for this population. However, it is not yet clear what factors predict the psychological well-being of individuals who are late-deafened. It is clear from Livneh and Wilson (2003) that age of onset of the condition, and individual perceptions of disability, rather than diagnosed severity, are documented as predictors of adaptation. In addition, coping has been well established as a predictor, a mediator and moderator throughout the coping literature

(Folkman & Moskowitz, 2004; Livneh & Wilson, 2003). This dissertation will examine predictors of psychological well-being and the potential mediating role of coping.

In a review of the literature, Miklos (2000) examined whether subjective measures of symptoms of hearing loss were predictive of psychological distress and whether coping affected the relationship between symptoms of Meniere's Disease (marked by hearing loss, tinnitus, aural fullness and vertigo) and psychological distress. Participants consisted of a total of 78 individuals, 15 men and 63 women diagnosed with Meniere's Disease, from the U.S. and Canada. The average age was 54 years ($SD = 12.41$), 74% were married, 45% had some college, 39% worked full time, and 97% were Caucasian. In addition to the demographic survey, the battery of instruments included measures on coping with hearing loss, reaction to tinnitus, dizziness handicap, coping, psychological distress, and social desirability. Results revealed that severity of hearing loss and tinnitus did not have a relationship to psychological distress, but severity of vertigo did have a significant relationship to psychological distress. However, no direct relationship was found between either PFC or EFC and psychological distress, nor was either approach to coping found to affect the relationships between symptoms of Meniere's Disease and psychological distress.

According to Folkman and Moskowitz (2004), the most recent movement in the field is assessment of positive emotion and coping. Even in situations of high stress, such as death of a child or severe disability, such as a spinal cord injury, positive emotions have been identified with high or moderately high frequency. This demonstrates that people are looking for positive meaning in highly stressful situations, indicating the importance of developing a sense of meaning in situations, through beliefs and values.

Locus of control, environmental mastery and autonomy are at the core of PFC, such that positive feelings are connected to positive experiences, which in turn generate future motivation to solve problems, ultimately making coping more successful. In other words, once a person has successfully solved problems with a specific approach, he or she is more likely to repeat the use of that approach. Although mixed, there is evidence that coping is a predictor and mediator of psychosocial outcomes in studies of individual with disabilities.

Clearly, cognitive models, like the transactional approach by Lazarus and Folkman (1980, 1984) appear to be amenable to clinical intervention (Folkman & Moskowitz, 2004), and are currently the model of choice. Specifically, the use of PFC for individuals adapting to CID (Livneh & Antonak, 2005), which is situational and contextually dependent, has been proven to act as a predictor and mediator of psychosocial outcome, such as psychological well-being.

Psychological Well-being

According to Diener (2000), well-being is the manifestation of a state of existence based on the interpretation of one's own ideas of life, and an analysis of the sum conclusion of positive and negative life events. Seligman and Csikszentmihalyi (2000) and Diener (2000) described well-being as happiness, relating back to the philosophical roots of the interpretation of the essence of life. Essentially, well-being, including happiness, is the examination of one's life, in sum conclusion, at any one moment in time. According to Livneh and Antonak (2005), the most highly regarded outcome of rehabilitation is that of quality of life, which encompasses psychological well-being. Individuals with CID are provided rehabilitation in efforts to promote adaptation to

disability. Reintegration of limitations allows the future pursuit of goals and dreams and along with it the promotion of quality of life, and psychological well-being. According to adaptation theory (Diener et al, 2006) however, how one adapts to a disability may vary in rate and level of adaptation, as adaptation has been shown to be multi-dimensional and individually dependent. Each individual is unique in how he or she responds to stimuli, especially permanent conditions, such as hearing loss, which can affect psychosocial outcomes like life satisfaction and psychological well-being.

Diener (2000) proposed that well-being was composed of three main components: subjectivity (an individual's opinion of well-being); measures of positive concepts (not just negative as in the past); and the sum of one's life assessment. In contrast to Diener (2000), Ryff (1989a) conceptualized psychological well-being as a convergence of the following constructs: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. According to Ryff, these six concepts in combination provided a more complete measure of well-being than a single-item measure.

Keyes, Shmotkin, and Ryff (2002) defined psychological well-being as the "perception of engagement with existential challenges of life" (p. 1007). Psychological well-being pertains to how a person acts and reacts to life events external to the self. Psychological well-being evolved from developmental theory and accounts for growth and change which takes place over the course of a lifetime. Based on the six dimensions noted above, Ryff's (1989a) approach is currently recognized as the standard measure for psychological well-being. Lent (2004) reported on Ryff's success in defining psychological well-being and confirmed that it is the most widely recognized concept of

psychological well-being. Ryff's model provides the theoretical basis for the following six dimensions (see Table 1).

Table 1

Six Dimensions of Psychological Well-Being (Ryff, 1989a, 1989b)

Dimension	Definition
Self Acceptance	Positive evaluation of oneself and one's past life
Personal Growth	A sense of continued growth and development as a person
Purpose in Life	Belief that one's personal life is purposeful and meaningful
Positive Relations With Others	The possession of quality relations with others
Environmental Mastery	The capacity to manage effectively one's life and surroundings
Autonomy	Sense of self-determination

Self-acceptance.

Ryff (1989a, 1989b) identified self-acceptance as the most commonly occurring term in the theoretical literature on psychological well-being. Self-acceptance is described as a key characteristic of psychological well-being as well as a part of personal development. This concept includes the ability to incorporate past and present events (positive and negative) into current understanding of one's self. Self-acceptance defines the state of approval of one's self, by one's self; being accepting of traits, habits, characteristics, values and decisions.

A literature search on self-acceptance as it applies to individuals who are deaf generated two articles. Sevigny-Skyer (1990) documented a self-report about the need for approval from parents to gain self-acceptance. Ultimately, the author explained that relationship skills are greatly impacted by self-acceptance and self-esteem, which are developed by parental acceptance and nurturance. Of great importance is the

understanding that lack of parental acceptance of deafness can lead to shame, guilt and difficulty with future relationships. Antia (1994) reviewed effective peer interaction strategies of students who were deaf. Although the review did not cover self-acceptance in depth, the overarching point was that effective social strategies are highly important to the self-acceptance of individuals who are deaf.

Positive relations with others.

Ryff (1989a, 1989b) summarized this dimension as loving, emotional relationships with significant others. Being able to have fulfilling, healthy relationships is essential for positive mental health. This dimension also encompasses the desire to be socially active and involved in the lives of others.

According to Leigh and Stinson (1991) positive relationships with others, specifically parents, other family members, and peers, are affected by experiences that are salient to each individual. Individuals who are deaf are at risk for decreased self-esteem and they envision less control over the environment than hearing peers, which in turn can affect the development of various relationships. Leigh and Stinson (1991) cited three components important to the development of relationships, including participation, which is the frequency of interaction, relatedness, which is one's emotional security with important relationships, and perceived social competence, which is the ability to create and succeed in relationships. Depending upon the group with which one is socializing, an individual who is deaf will need different skills to be successful developing relationships. Verbal skills generate more success in the hearing community and sign language skills generate more success in the Deaf community. A combination of these skills may generate more success in both arenas. Leigh (1999) supported this position by

documenting that positive experiences and relationships with both deaf and hearing peers improve identity, self-esteem, and the well-being of individuals who are deaf. Polat (2003), however stated that other variables, yet unaccounted for, explain the majority of variance in psychosocial adjustment for individuals with hearing loss.

Autonomy.

Autonomy, as defined by Ryff (1989a, 1989b), is the ability to function independently, resisting peer pressure to conform to prescribed social norms, accepting only that which meets a personal standard, rather than social standards; that is, creating one's personal standards based on previous experience, which is also a tenet of adaptation theory. Autonomy, a term which means self-directed in the quality of existence, has not always been a characteristic associated with people who are deaf.

Some authors (Arnold, 1984; Biringen, 1998; Leigh, Robins, Welkowitz, & Bond, 1989; Pipp-Siegel, & Venn, & Wadler, 1990; Richardson, Long, & Foster, 2004; & Sander, 1983) have discussed education, communication, and parenting in combination with autonomy of individuals who are deaf. In totality these articles, which did not focus on autonomy, imply the same theme –that individuals who are deaf need autonomy in their lives. Like everyone, individuals who are deaf need autonomy in relationships, parenting style, education, academic engagement, language, communication, culture, physical and mental care, living arrangements, and decisions that govern quality of life, to name a few.

Environmental mastery.

As described by Ryff (1989a, 1989b), environmental mastery is the ability to establish and organize the outside world in an understandable and functional manner to

promote health and well-being. The ability to control the environment allows for present and future success in many domains of life. To a degree, one must adapt to and influence the environment to engineer success. According to Saunders (2002) environmental mastery is how an individual impacts the environment, or one's locus of control. Locus of control is the origination of influence in one's life.

Kennedy (1994) stated that individuals who are deaf develop, over time, an external locus of control. Enduring abuse and powerlessness, coupled with experiences of oppression and decision making controlled by others, results in an external locus of control for individuals who are deaf.

Purpose in life.

Purpose in life is defined by those qualities which make life worth living. Ryff (1989a) described this as "purpose in and meaning to life" (p. 1071). Certain actions represent direction in decision making and a desire for specific outcomes. Saunders (2002) described purpose in life as a sense of self-direction defined by goals and objectives that provide meaning over time. Purpose in life is finding meaning to direct one's actions throughout one's lifetime. As life evolves, so do goals and objectives. One may redefine purpose as maturation occurs and life events unfold, consistently giving life meaning.

Although Sheridan (2001) does not explore this concept directly, the author does provide vignettes through which a sense of purpose in life is evident. Purpose in life may be found through culture and personal attachments to significant others during the course of a lifetime. As well, having a sense of community and belongingness is important to individuals who are deaf, as it is for most people.

Calderon and Greenberg (2000) documented that psychosocial development is necessary to have a successful life, which includes the ability to set and achieve personal goals. Having and achieving goals demonstrates purpose in life through academic, family, or career success. Two critical components to promote social competence and strong relationships for individuals who are deaf are development of positive communication and good social networks.

Personal growth.

To have a satisfying life, one must continue to change, adjust, and adapt, both internally and externally. Ryff (1989b) determined “the ability to adapt to an ever changing world requires such continued personal growth” (p. 44). Growth is an effort eternally put forth to continue evolving as an individual.

Personal growth, as defined by Saunders (2002), is self-actualization, a continual process occurring over a lifetime. Psychological growth of one’s self is an on-going endeavor that requires vulnerability and willingness to experience new situations, resulting in personal change. Some degree of self-awareness is also required to facilitate change. Robitschek (2003) stated that personal growth is purposeful behavior that brings about self-change and that process may be applicable to different cultures, beyond Western ideals. Robitschek stated that positive growth is related to psychological well-being and to locus of control. As stated earlier, locus of control is related to environmental mastery, which is also a component of psychological well-being.

Important to personal growth is Greenberg and Kusche’s (1993) study, in which the authors stated that much of self-awareness is created during the development of language. During this developmental period, children begin to symbolize relationships

through language, learn self-control, and develop an awareness of the self, which is ultimately important to personal growth. Kusche, Garfield, and Greenberg (1983) demonstrated that emotional development is not solely attributed to maturation, but also to the development of language and communication skills. Individuals who are late-deafened experience hearing loss after age 12 and therefore have acquired language and verbal communication skills.

This conceptualization of well-being (Ryff, 1989a, 1989b) including the six domains of self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery and autonomy, is the currently accepted model of psychological well-being (Karademas, 2007). Psychological well-being has been established as one of the main outcomes in the rehabilitation of individuals with CID, including hearing loss.

Well-being and Late Deafness

Little information exists on the well-being of individuals who are deaf and only four studies could be identified on the well-being of individuals who are post-lingually, late-deafened (Hallberg et al, 2005; Hallberg, Hallberg, & Kramer, 2008; Helvik, Jacobson, & Hallberg, 2006, Kashubeck-West & Meyer, 2008). Although most studies such as Gagne (1992) explored speech, language, and adjustment to cochlear implants, a few authors (Maxwell, Poeppelmeyer & Polich, 1999; Werngren-Elgstrom, Dehlin, & Iwarsson, 2003; Winoground, 1984) have completed cursory examinations of the well-being of individuals who are deaf.

Winoground (1984) reviewed the impact of sensory changes in older adults on well-being, documenting that 55% percent of older adults by age 65, and 66% by age 80,

will have a serious hearing impairment, in addition to numerous physical and mental secondary conditions that can occur as a result of hearing impairment, such as tinnitus, otosclerosis, isolation, and even paranoia. Due to difficulty with communication, acquisition of a hearing impairment has been shown to cause vulnerability to stress and isolation. McIntosh (2000) stated that not being able to hear can affect a person's sociological, psychological, and emotional well-being. Steinberg (1991) also suggested that individuals who are late-deafened, especially, those who experience progressive loss, may experience anxiety and depression. The prevalence of hearing loss indicates that most counselors will have contact with individuals with some degree of hearing loss, and should be aware that there can be secondary issues with mental health and psychological well-being.

Maxwell, Poepelmeyer, and Polich (1999) completed a review of belongingness of individuals who are deaf. It is difficult for some people who are deaf to know where they fit in society. Some people who have acquired hearing loss may culturally identify with people who are hearing and thus do not fit with the Deaf community. Maxwell et al. (1999) concluded that not belonging to a community can lead to the desire not to live and that those individuals who have exceptional oral skills were at greatest risk. This logically may include individuals who lose hearing after childhood, approximately age 13 (post-lingual, late-deafness as defined by Mason, 1996). According to Bat-Chava (2000), group identification may improve psychological well-being.

Hallberg, Ringdahl, Holmes, and Carver (2005) studied the psychological general well-being of late-deafened adults from the US and Sweden who had cochlear implants. Participants were 96 individuals, 48 from America and 48 from Sweden with a mean age

of 62 years, ($SD = 15.3$). There were 52 females and 44 males. All participants were late-deafened and had had cochlear implants (CI) for approximately 4.5 years ($SD = 4.1$). In addition to administering a demographic questionnaire and six items on the benefits of CI and social supports, the authors examined the perceived outcomes of having a CI and the psychological well-being of the participants.

Mean scores for psychological well-being demonstrated significant differences between national groups on three of the subscales: depression, positive well-being, and self control (Hallberg et al., 2005). US participants reported higher scores than Swedes, meaning they felt less depressed, were happier with life, and felt more in control of their behavior, thoughts and feelings. Mean scores for the measure on CI outcomes demonstrated significant differences between groups on two of the items. Individuals from the US reported being only slightly affected by their hearing loss, whereas individuals from Sweden reported being moderately affected by their loss. In addition, individuals from Sweden thought others were moderately bothered by their hearing loss, more significantly so than individuals from the US.

Last, Hallberg et al. (2005) conducted stepwise regression analysis to predict the psychological general well-being of this population. Four predictor variables were identified, which explained 49% of the variance: 1. How much do you think other people were bothered by your hearing difficulties (22% of the variance); 2. Having a close friend or family member who gives support in daily life (14% of the variance); 3. Age (increasing age is a covariate with psychological general well-being) (8% of the variance); and 4. Over the past week, with your CI, how much have your hearing difficulties affected the things you can do? (explained the remaining 5% of the variance).

These results suggested that individuals who are deaf have benefited from CI, including an increased quality of life.

In a study of adults with hearing loss, Helvik, Jacobson, and Hallberg (2006) examined how psychological well-being was related to audiological factors, consequences of hearing loss, sense of humor and use of communication strategies. Participants were 343 patients from a medical (audiological) clinic, 188 males and 155 females, with an average age of 69 ($SD = 13.8$). Most individuals had a moderate or severe hearing impairment. In addition to general audiological assessments and demographic questionnaires, four measures were administered to assess the following: general psychological well-being, disability and handicap, sense of humor, and communication strategies.

The results showed significant gender differences between males and females, such that males scored significantly higher on all scales, reporting less anxiety and depression, and greater self-control, vitality, and general health (Helvik et al., 2006). Well-being was also found to be positively correlated with age, but not related to education. Well-being also was not related to degree of hearing loss, reported hearing loss severity, and duration of hearing loss, but well-being was positively correlated to previous hearing aid experience. Sense of humor was also found to be strongly positively correlated with well-being. Multiple regression revealed that higher levels of activity limitation, lower sense of humor and higher participation restriction were all correlated with lower psychological well-being. There was no correlation between hearing loss (subjective or objective) or communication style and psychological well-being. Although there is no single pattern to how individuals with CID will react to impairment, having a

sense of humor appears to aid with adjustment, as it was found to be strongly related to well-being.

To examine hearing difficulties and psychological well-being in individuals with hearing loss, and to determine how hearing loss (subjective and objective), and communication strategies related to psychological well-being, Hallberg, Hallberg, and Kramer (2008) conducted a study to translate an inventory that measured disability and handicap from English to Swedish. Participants were 74 patients from hearing clinics, 39 males and 35 females, with a mean age of 68.7 years ($SD = 10.2$). Measures included an assessment of psychological well-being, communication strategies, and an assessment for disability and handicap.

The results from Hallberg et al. (2008) showed significant gender differences between males and females, such that males had a statistically significant higher total score, indicating better well-being. There was also a statistically significant gender difference on one subscale, as males scored higher on vitality than females. As for communication, females demonstrated statistically significantly greater use of non-verbal strategies when communicating compared to males. However, females did report overall lower quality of life compared to males.

Hallberg et al. (2008) found that communication strategies were related to well-being, such that infrequent use of maladaptive communication behavior and frequent use of non-verbal strategies were significantly related to higher levels of well-being. No correlations were found between age, education, or length of hearing loss and well-being. Last, a stepwise multiple regression analysis was conducted to predict the psychological well-being of this population. Two predictor variables were identified, explaining 48% of

the variance. Maladaptive behavior strategies accounted for 33% of the variance, and intelligibility in quiet explained 15% of the variance. Maladaptive behaviors were defined as actions that inhibit communication, such as pretending to hear, avoiding, and piecing conversations together, which contributes to lower quality of life. “Intelligibility in quiet,” was defined as difficulty hearing in quiet environments, which also adds to a reduced quality of life. It is clear that how one copes should also be a focus of intervention for individuals with hearing loss, not just audiometric data.

Kashubeck-West and Meyer (2008) examined the psychological well-being of women who were late-deafened. The psychometric qualities of two instruments (Psychological Well-being Scale; Ryff 1989a, 1989b and the Satisfaction with Life Scale; Diener et al., 1985) were also investigated. Participants were recruited online and consisted of 138 women, with an average age of 47.46 years ($SD = 10.59$); 87% were Caucasian, 94% were heterosexual, 61% were partnered, 72% had a college education, 46% were middle class, 27.7% were middle-upper class, 14.6% were lower-middle, 9.5% were working class and 2.2% were upper class. Fifty-seven percent had a profound hearing loss, although 46% did not know what caused the loss. Eight-six percent did not consider themselves culturally Deaf, 39% used sign language, and 68% preferred oral language to communicate.

Kashubeck-West and Meyer (2008) established convergent validity for both the Psychological Well-being Scale (Ryff, 1989a, 1989b) and the Satisfaction with Life Scale (Diener et al., 1985), as scores from the measures were found to be positively correlated with scores from the Rosenberg Self Esteem Scale (Rosenberg, 1965) and the Personal Growth Initiative Scale (Robitschek, 1998). Discriminant validity was examined using

the Marlow-Crowne Social Desirability Scale (Crowne & Marlowe, 1964), but only partially established. Scores on satisfaction with life did not correlate with scores on social desirability, providing evidence of discriminant validity. However, scores of overall psychological well-being and five of the six subscales correlated with scores on social desirability, providing only partial evidence of discriminant validity for this sample. It was hypothesized that individuals who are late-deafened recognized the need to put extra effort toward providing a positive social appearance. It is believed that this may be done to mitigate the negative effects of hearing loss, in efforts to gain acceptance from others.

Examination of psychological well-being revealed that women who were late-deafened had significantly lower levels of well-being on five of the six subscales (not autonomy), compared to a sample of women from the general population (Kashubeck-West & Meyer, 2008). Likewise, this sample reported lower satisfaction with life than a comparison sample of women. Multivariate analyses of variance (MANOVA) indicated that women who were working class/lower middle class experienced lower satisfaction with life, lower psychological well-being, and lower self esteem, than women from higher socioeconomic classes. Last, a correlation was found between self-esteem and length of time since hearing loss began. Greater time since loss was significantly correlated with higher self esteem.

In sum, a few studies (Hallberg et al., 2005; Kedde & van Berlo, 2006; Livneh & Antonak, 2005; Livneh & Cook, 2005; Mona, Gardos, & Brown, 1995; Polat, 2003) have shown that well-being is related to age, adaptation to disability, reported severity of hearing loss, and/or duration of loss. Yet, other studies have failed to find similar results

regarding severity or perceived severity of loss (Hallberg et al., 2008; Helvik et al., 2006). Gender differences have also been found for well-being, such that males have demonstrated more positive outcomes for anxiety, depression, vitality, and general health and females have demonstrated significantly greater use of non-verbal strategies when communicating (Helvik et al., 2006). However, in one study (Hallberg et al., 2008) females reported overall lower quality of life compared to males. Some studies (Gomez & Mady, 2001; Hallberg & Carlsson, 1991) have shown that maladaptive communication techniques are commonly used by individuals with hearing loss, and in one study these maladaptive techniques explained 33% of the variance predicting well-being (Hallberg et al., 2008). Coping has been mentioned time and again in the research on well-being and CID as an explanation for differences in individuals' abilities to manage stress and adjust to the demands of impairment. Coping has also been cited as a possible explanation for unexpected results.

Although research has increased, examination of quality of life and psychological well-being as it applies to individuals who are late-deafened is ripe for exploration. As 10-15% of the adult population has some degree of hearing loss, making it the most common communication disorder for adults (Helvik et al., 2006), counselors and service providers will greatly benefit from further research on factors that affect the psychological well-being of individuals who have experienced hearing loss. As our society ages as a whole, the number of individuals with hearing loss will only increase.

Severity of Disability

One factor of major importance to individuals with hearing loss is the severity of the loss. Severity of hearing loss is one's perception of loss or perception of the impact of

loss, rather than one's documented loss of hearing in decibels (dB). Many individuals with hearing loss are unsure of their actual medical loss of hearing. Loss in dB is only weakly related to perceived severity of disability or handicap; at best, dB is a poor predictor of psychosocial outcomes (Hallberg & Carlsson, 1991). According to Lucas (2007) the process of adaptation, (based on adaptation theory Diener et al, 2006), is affected by the extent of the disability, which includes severity of disability, and fluctuation/degeneration of condition, which is commonly associated with hearing loss, as it often a degenerative condition. These factors can ultimately affect well-being.

Perception of severity of disability also affects adaptation to CID. According to Livneh and Wilson (2003), adaptation to CID is predicted by numerous personal, social and contextual variables, including age of onset, severity of disability, self-concept, and social support networks, to name a few. Perceived severity of disability is a function of the mental, emotional or physical limitations experienced from the specific CID. Functionality, which can be assessed objectively or subjectively, is the degree to which various mental or physical tasks can be performed.

Numerous studies have examined the predictive relationship between the subjective perception (how one thinks or feels about one's health condition as opposed to the objective measure of a test) of health and the outcome of health, such as a disability (Kelley-Moore, Schumacher, Kahana, & Kahana, 2006). Kelly-Moore et al. (2006) conducted a health survey to which responses included a subjective assessment of one's health and/or functional status, and a comparison of oneself to a reference group. When assessing health status, individuals tended to compare themselves with peers. Likewise, perceived disability may have a strong social ranking component, including a comparison

with peers and an evaluation of health status, including the ability to fill social roles. Both declining health and psychosocial orientation towards health have been found to affect perception of health assessment (Kelley-Moore et al, 2006).

Acquiring a disability later in life is often the result of chronic illness, disease, or injury. According to Kelley-Moore et al. (2006) individuals with adventitious disability are less likely to develop an identity incorporating the disability. These individuals have had so many life experiences in most domains, such as parenthood, and employment, that they may have great difficulty reorienting their identity or recreating a sense of self incorporating their many roles with their newly acquired abilities or limitations. If they cannot adapt, they may perceive themselves as more disabled than average, given their situation.

Martz (2002) examined the relationship of psychosocial variables, which included severity of disability and age of onset, to future time orientation of individuals with a spinal cord injury. Time orientation refers to an individual's attitude towards the past, present, or future. Future time orientation is specific to how an individual feels about and is invested in the future. Participants were 317 individuals with spinal cord injury- 182 were veterans and 135 were civilians. The average age of participants was 43 years ($SD=13.7$), and average age of onset was 33 ($SD=14$) in the civilian group and 39 ($SD=16.9$) in the veteran group.

Results of Martz (2002) showed that in all of the analyses, neither severity of disability nor age of onset was found to be a statistically significant predictor of future time orientation. Phases of adjustment and disability related factors, such as pressure ulcers, were found to be predictors of future time orientation. These are also factors that

are amenable to change and can become a focus of intervention for rehabilitation counselors.

Helvik et al. (2006) examined the relationship between hearing loss severity and psychological well-being of adults with acquired hearing loss (for a full review see section on psychological well-being). Although the results failed to demonstrate a relationship between well-being and severity or duration of hearing loss, a number of other authors acknowledged that studies have demonstrated this relationship in older adults (c.f., Bess, Lichtenstein, Logan, Burger, & Nelson, 1989; Dalton et al., 2003).

The literature is mixed on the relationship between perceived severity of disability and psychosocial outcomes. There is evidence that perceived severity or subjective measures of disability are better predictors of outcomes, such as adaptation or psychological well-being, than objective measures of disability, yet not all studies consistently demonstrate such results. According to Kelley-Moore et al. (2006), numerous studies have used subjective measures of health, such as perceived severity of disability, as a predictor and as an outcome in disability related research (c.f., Chaves, & Johnson, 2000; Fried et al., 1997). As would be expected, individuals who have multiple impairments or more health challenges (taking more medication, experience more pain) tend to rate their health as poor. Yet those in obvious poor health may rate themselves as better than they would be objectively measured. The concept of perception of health is obviously multidimensional and not solely dependent upon the objective rating or the presence of a disability.

Age of Onset of Disability

Age of onset of disability is the age at which one acquires a chronic illness, condition or disability, and as age of onset increases, adaptation decreases (Polat, 2003). Adaptation later in life can affect self-concept, social and vocational opportunities, self-worth, self-esteem and psychological well-being (Jambor & Elliot, 2005). Kelley-Moore et al. (2006) felt that disabilities acquired later in life are more challenging, as the “disability identity” does not have the same opportunity to develop, which in turn affects adaptation. Later adulthood encompasses individuals who had lived long enough into adulthood to have been established vocationally, as a family, and independently of their families of origin. Developmentally, in later adulthood, one’s self-concept has a solid foundation around vocation, partnership, parenthood, and social networks. It can be a daunting task to shift from an able-bodied identity to a differently-abled identity later in life. Individuals who acquire a disability later in life have to adapt to the condition and symptoms; therefore, they have a greater tendency to subjectively view themselves as disabled, as their perception of independence has decreased. Individuals who acquire a disability later in life may find adjustment a more challenging process than those individuals who were born with an impairment or who acquire it earlier in life, upholding the theory of adaptation, which postulates that some conditions may be too daunting or challenging, inhibiting adaptation.

Kazdin (2000) suggested that the age of onset of hearing loss can influence social and psychological development. In addition, both hearing loss, and to a greater extent, severity of loss, predicts how an individual will function socially. Pensgarrrd and Sorensen (2002) also noted that age of onset of disability is an important factor affecting

self-perception and self-esteem of individuals with acquired disabilities. Individuals who acquire hearing loss later in life experience communication difficulties with both the hearing and Deaf culture. This may limit future life experiences due to language barriers with both cultures, hindering adaptation due to issues with lack of acceptance and belongingness.

Mona, Gardos, and Brown (1994) examined the relationship among age of onset, nature of disability, and sexual self-esteem of women with disabilities. The participants consisted of 43 women with mobility impairments, the average age was 37 years, with a range of 23 to 55 years, most were Caucasian (N=32), and participants were recruited online. In addition to demographic questions, participants were surveyed about type of disability, age of onset of disability, duration of disability, and sexual activity. Also administered were scales on activities of daily living, a scale on sexuality, and self-esteem. Results from the multiple regression analysis indicated that, as age of onset of disability increased, sexual self-esteem decreased. These results are congruent with the concept that, when a disability is acquired later in life, it is difficult for the individual to incorporate limitations into his or her current self-concept (Kelley-Moore et al., 2006).

In another study on sexual satisfaction and sexual self-image of individuals with physical disabilities (Kedde & van Berlo, 2006), the association between sexual well-being and age of onset, relationship status, care dependency, and age were explored. Participants were 95 men and 65 women, with a mean age of 37 years ($SD= 12.71$), and 56% were partnered. In addition to a demographic survey, participants completed questionnaires on physical disability, sexuality and body esteem, sexual satisfaction, psychological distress, evaluation of sex life, and care dependency. Results from multiple

regression indicated that as age of onset increased in men, sexual satisfaction decreased. Men who acquired a disability later in life demonstrated less sexual satisfaction and lower body esteem than men who had congenital disabilities. These results indicate that men who experience acquired disabilities later in life have more adjustment issues than women and more adjustment issues than men with congenital disabilities.

According to Jambor and Elliott (2005), age of onset of hearing loss can be an important determinant of communication, identity and self-esteem. Individuals with hearing loss later in life, or post-lingually, must learn to adapt to new social situations and develop cognitive and emotional strategies to communicate and interact in all contexts. Again, this degree of adaptation can affect self-concept, including self-worth, self-esteem, and psychological well-being.

Clearly, as age of onset increases, adventitious disability presents unique challenges that run deeper than activities of daily living and the obvious adjustments specific to the acquired disability. Age of onset of acquired disability directly affects psychosocial attributes, which as one ages proves to affect adaptation and well-being.

This literature review examined constructs concerning the relationships between disability-related variables and psychological well-being for individuals who are late-deafened: hearing loss, psychological well-being, adaptation to disability, coping, adaptation theory, severity of disability and age of onset of disability. The literature provides support for the relationship between the main constructs (age of onset, perceived severity of disability and adaptation to disability) and psychological well-being. There is also support in the literature for coping as a mediator and predictor of the relationship between these disability-related factors and well-being. However, research clarifying the

specific relationships of adaptation, severity, age of onset and coping to well-being for individuals who are late-deafened was not revealed in the literature. Based on an analysis of the literature, a number of research questions remain that would advance the field of counseling and provide further assistance to individuals who are late-deafened.

The hypotheses for this study are:

Coping style will mediate the relationships between the predictors and psychological well-being such that:

H⁰: Emotion focused coping (measured by the Ways of Coping Questionnaire; WoCQ, emotion focused (EFC)* subscale) will not mediate the relationship between age of onset and psychological well-being (as measured by the Psychological Well-Being (PWB) Scale).

H¹: Emotion focused coping will mediate the relationship between age of onset and psychological well-being. Operationally, increased age of onset will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB Scale.

H⁰: Emotion focused coping (measured by the Ways of Coping Questionnaire; WoCQ, emotion focused (EFC)* subscale) will not mediate the relationship between perception of severity (as measured by the Hearing Handicap Inventory for Adults; HHIA) and psychological well-being (as measured by the PWB scale).

H²: Emotion focused coping will mediate the relationship between perceived severity and psychological well-being. Operationally, greater HHIA scores will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB Scale.

H^0 : Emotion focused coping (measured by the Ways of Coping Questionnaire: WoCQ, (EFC*) subscale) will not mediate the relationship between adaptation (measured by the Reaction to Impairment and Disability Inventory, RIDI) and psychological well-being (as measured by the PWB scale).

H^3 : Emotions focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, lower RIDI scores will predict higher scores on the WoCQ, EFC* subscale, which, in turn, will predict lower scores on the PWB scale

H^0 : Problem focused coping (measured by the Ways of Coping Questionnaire: WoCQ, (PFC*) subscale) will not mediate the relationship between adaptation (measured by the RIDI) and psychological well-being (measured by PWB scale).

H^4 : Problem focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, greater scores on the RIDI will predict higher scores on the WOCQ, PFC* subscale, which in turn, will predict higher scores on the PWB scale.

*Emotion focused and problem focused coping are measured through a second order correlation of the Ways of Coping Questionnaire. This factor analysis identifies the items belonging to each (EFC and PFC) subscale on which coping style will be measured.

Chapter III – Methodology

The purpose of this chapter is to review the methodological approach and design of this study. To provide details of the methodology, a thorough review of participants, instruments, procedures, research design, and analyses were completed. The present research study is an extension of the work on the psychological well-being of individuals who are late-deafened completed by Kashubeck-West and Meyer (2008). In that study, the authors found that the psychological well-being of women who were late-deafened was significantly lower than the general population. The current project takes these findings one step further, examining how coping affects the relationships between characteristics of disability and psychological well-being.

To examine the hypotheses, detailed information is provided on instrumentation and structural equation modeling, which was utilized to determine how coping affects the relationships between: age of onset of disability and psychological well-being; severity of disability and psychological well-being; and adaptation to disability and psychological well-being. As age of onset of disability increases, the ability to incorporate functional limitations into one's self-concept decreases, increasing the perception of disability and loss of control, ultimately affecting psychosocial outcome like psychological well-being and life satisfaction (Jambor & Elliot, 2005; Kelly-Moore et al., 2006). When an individual views his or her options as limited, or out of control, the tendency is to rely on emotion focused coping (Folkman & Moskowitz, 2004; Lazarus, 1993). It was therefore hypothesized that as age of onset increases, emotion focused coping will increase, leading to lower levels of psychological well-being.

Similar to age of onset, perception of severity has a relationship with psychosocial outcomes. Research has shown that as severity of disability increases, psychosocial outcomes, specifically psychological well-being and adaptation to disability, decrease (Polat, 2003; Werngern-Elstron et al., 2003). In addition, coping has been shown to mediate the relationships between disability related characteristics, such as age of onset and perceived severity of disability, and psychosocial outcomes (Livneh & Antonak, 2003). Based on these relationships, it was hypothesized that as perceived severity increases, emotion focused coping will increase, leading to lower levels of psychological well-being.

Adventitious hearing loss is a chronic and devastating condition which requires adaptation, however some conditions are so devastating an individual may not be able to adapt (Diener et al., 2006). The inability to adapt to one's acquired disability, such as late-deafness, has direct implications for psychological well-being, as reported by Kashubeck-West and Meyer (2008). In addition, the literature provides evidence that emotion focused coping is used when little control can be exerted over situations and when options are limited (Folkman & Moskowitz, 2004; Lazarus, 1993), as is the case with individuals who have an acquired disability. These results suggest that as adaptation decreases (less successful acceptance and acknowledgment of one's disability), emotion focused coping will increase, leading to lower levels of psychological well-being. However, research has also shown that as adaptation increases (acceptance and acknowledgement of one's disability), better psychosocial outcomes are predicted, specifically psychological well-being (Jambor & Elliot, 2005) Also, use of more active coping styles, such as problem focused coping, has also been related to more positive

psychosocial outcomes, specifically adaptation and psychological well-being (Livneh & Antonak, 1997, 2003). It was therefore hypothesized that, as adaptation increases, use of problem focused coping will increase, leading to higher levels of psychological well-being.

Participants

The initial participant pool included 454 individuals with hearing loss or deafness who began the survey. Due to selection criteria, 31 cases were omitted as they were older than 65 and one participant was 14. Another 161 cases were omitted because these individuals did not report their age of hearing loss or reported a hearing loss before age 12. Finally 60 cases were eliminated for missing data. Thus, the final sample was composed of 202 individuals who lost hearing after age 12, and had a mean age of 49.70 ($SD=10.99$). The participants reported losing their hearing at an average age of 32.12 ($SD=12.89$). Participants older than age 65 often have numerous health related issues, including age-related hearing loss. Based on the fact that age related conditions can confound results, individuals who are older than 65 have not been included in this study. The respondents reported a range of hearing loss - 2 (1%) reported a mild loss, 14 (6.9%) reported a moderate loss, 36 (17.8%) reported a moderate-severe hearing loss, 40 (19.8%) reported a severe loss, 103 (51%) reported a profound loss, and 7 (3.5%) reported that they did not know their level of hearing loss. Participants also reported additional hearing related conditions - 27 (13.8%) reported Meniere's disease, and 86 (44.1%) reported Tinnitus. 117 (67%) reported however, that they did not have a secondary condition. The sample consisted of 158 (78.2%) females, 43 (21.3%) males, and 1 (.5%) participant who reported as transgender.

Frequency analyses revealed that 183 (92%) participants identified as heterosexual, 11 (5.5%) reported as gay or lesbian, 5 (2.5%) reported as bisexual, and 3 were missing. In terms of race and ethnicity, 181 (91.4%) identified as Caucasian, 4 (2%) identified as African American, 6 (3%) identified as Asian, 1 (.5%) identified as Pacific Islander, 2 (1%) identified as American Indian, and 4 (2%) identified as Bi-racial, and 4 were missing. Most individuals, 189 (95.5%) reported that they did not have Hispanic heritage. About half of the sample, 103 (51%) learned of the survey from a listserve on the internet, such as the Association for Late-Deafened Adults (ALDA), the Hearing Loss Association (HLA), and various Yahoo groups for individuals who are deaf or have a hearing loss. Most participants, 190 (94.1%) reported that they considered themselves to be late-deafened, 157 (77.7%) felt that their hearing loss was a medical condition, and 157 (77.7%) felt that the hearing loss was a disability. Just over half of the participants, 109 (54.2%) reported that they belonged to the hearing culture, 6 (3%) reported that they affiliated with the Deaf culture, 52 (25.7%) reported being bi-cultural, and 25 (12.4%) reported no affiliation with either the Deaf or hearing culture.

Most of these participants, 139 (68.8%) reported a mainstream or integrated educational setting, whereas 47 (23.3%) reported having an oral education, and 4 (2%) reported an ASL education. Eight (4%) participants reported both an oral and mainstream education, 1(.5%) reported and ASL and mainstream education, 1(.5%) reported an oral and ASL education, 1(.5%) reported a “private” education, and 1 was missing on this item. Most participants, 61 (31.2%) had a college education with 75 (37.1%) reporting a graduate school education. An additional 40 (20%) participants reported some college education. Most participants, 120 (59.4%) reported being partnered or married, with an

additional 41 (20.3%) individuals indicating they were single, and 32 (15.8%) identifying as divorced. In terms of socioeconomic status, 89 (44.1%) respondents reported belonging to the middle class. Of the remaining respondents, 33 (26.5%) reported belonging to the working class, 43 (21.3%) reported belonging to the lower middle class, 32 (15.8%) belonged to the upper middle class, and 3 (1.5%) reported belonging to the upper class of SES. Residential location was evenly split, as 44 (22.4%) participants reported a residence in the Northeast, 40 (20.4%) participants reported living in the Midwest, 56 (28.6%) participants reported living in the South, and 56 (28.6%) participants reported living in the West (2 were missing on SES and 6 on residence). Just over half of the participants, 121 (59.9%) indicated they were employed, and 80 (65%) of these people reported full-time employment.

In summary, just over half of the participants (54.2%) reported that they belonged to the hearing culture, and 25.7% reported being bi-cultural. Most of these participants reported having a mainstream or integrated education (68.8%), with a college (31.2%) or graduate school education (37.1%). Over half, 70%, reported a working or middle class SES background, and 59% were employed at the time of survey completion.

Identity questions were included in the demographic questionnaire to determine cultural affiliation of the sample. The cultural identity items were taken from a larger survey, the Deaf Acculturation Scale (DAS: Maxwell-McCaw & Zea, in press) composed of 58 items total. The two scales (Deaf identity and Hearing identity) were each created with five items from the DAS. Responses were based on a 5-point Likert Type scale. The results of the identity questionnaire revealed high cultural affiliation to both the hearing ($M=3.91$; $SD=.71$) and deaf community ($M=3.03$; $SD=.92$). According to Maxwell-

McCaw and Zea (in press), scores above 3.00 represent high cultural affiliation. As mentioned previously, the self-report of cultural affiliation also suggested that this sample demonstrated some bi-cultural affiliation.

Recruitment was conducted over the internet via websites for individuals who are deaf and late-deafened, such as the Association of Late-deafened Adults (ALDA) and the Hearing Loss Association of America (HLAA). Participants were also recruited from Craigslist, Facebook, and numerous Yahoo deaf groups to bolster recruitment to reach the number of estimated cases for analyses. Finally, participants were asked to pass the survey to anyone they knew who may be interested in the study.

Structural equation modeling was used for the main analyses. It is considered a robust technique, superior to regression analysis when multiple continuous and dichotomous variables are proposed for analysis. Tabachnick and Fidell (2001) noted that the number of necessary cases for structural equation modeling is estimated based on the number of predicted parameters, power, and effect size. Generally, the authors recommend that studies include approximately 10 subjects per parameter for a large effect size. This study contained three predictors - age of onset, perceived severity of hearing loss, and adaptation to disability; two mediators - emotion focused coping and problem focused coping; and one outcome variable - psychological well-being, which created approximately 11 parameters (including direct and indirect effects), based on the hypotheses. According to Tabachnick and Fidell, if a small or medium effect size is anticipated, a sample of 200 cases should be sufficient. Multiple Imputation (Schafer, 1997) using LISREL (8.7) was performed to impute missing data.

Measures

In addition to a demographic questionnaire, which included age of onset, a number of instruments were utilized to acquire data on the variables of this study. The Measure of Psychological Well-being (Ryff, 1989b), the Hearing Handicap Inventory for Adults (Newman, Weinstein, Jacobson, & Hug, 1990), the Reaction to Impairment and Disability Inventory (Livneh & Antonak, 1990), and the Ways of Coping Questionnaire (Folkman & Lazarus, 1988; Lazarus & Folkman, 1984) were provided via Survey Monkey to individuals who are late-deafened. These data have been used to describe the population and conduct the main analysis.

Demographics.

Demographic information was gathered by a brief questionnaire (see Appendix A), that solicited the participant's age, gender, sexual orientation, race, cultural identity, ethnicity, hearing status, cause of hearing loss, age of onset of loss, communication preference, educational level, disability status, relationship status, residential location, employment status, and perceived social class status. These demographics have provided the necessary information to describe the sample and also delivered data for one of the predictors - age of onset of hearing loss. Examination of participant characteristics was conducted through descriptive (i.e., average age; age at loss, etc.) and frequency analyses (i.e., number of participants; gender, etc.).

Measure of Psychological Well-being.

The Measure of Psychological Well-being (PWB) (Ryff, 1989b) is a theoretically based, multi-dimensional instrument that assesses psychological well-being, which is generally associated with positive psychological functioning, happiness, self-

actualization, and life satisfaction. The measure is a self-report format consisting of 84 items, with six main factors and 14 items per subscale, utilizing a six-point Likert-type scale for scoring. The response set ranges from 1 (*strongly disagree*) to 6 (*strongly agree*), with overall scores ranging from 84-504. Higher scores represent greater perceived psychological well-being. The six factors are as follows: self acceptance - seeing one's self clearly and in a positive manner ("In general, I feel confident and positive about myself"); positive relations with others – the ability to create and build upon warm interpersonal relationships with others ("Most people see me as loving and affectionate "); autonomy – the ability to self-govern behavior and beliefs from within ("My decisions are not usually influenced by what everyone else is doing"); environmental mastery – to be successfully in charge of one's own destiny; taking advantage of environmental opportunities ("In general, I feel I am in charge of the situation in which I live"); purpose in life – a clear understanding and sense of purpose in one's life ("I have a sense of direction and purpose in life"); and personal growth – continued growth and development as a person throughout life ("I am the kind of person who likes to give new things a try").

Using a rationally-derived method, items based on theoretical assumptions of the dimensions were written by three judges and assigned to the six dimensions of psychological well-being (Ryff, 1989a). A preliminary evaluation eliminated items for lack of fit, distinction, redundancy, ambiguity, comprehensiveness, and inability to generate response, leaving 32 items per scale (16 positive and 16 negative). The final items were administered to 321 participants to establish the psychometric integrity of the instrument. The participants varied in age, 60% had completed college, most had self-

reported good or excellent financial status, and about half of the sample were married and most were Catholic or Protestant. Item to scale correlations were conducted. The alpha coefficients for each scale were: self acceptance (.93); positive relations with others (.91); autonomy (.86); environmental mastery (.90); purpose in life (.90); and personal growth (.87). The scales at this point consisted of 20 items each, with equal number of positive and negative items. The test-retest coefficients for a six-week period were: self acceptance .85; positive relations with others .83; autonomy .88; environmental mastery .81; purpose in life .82; personal growth .81.

Participants also completed six different measures of well-being, in addition to Ryff's new measure, to examine the distinctness of the six dimensions (Ryff, 1989b). Correlations with positive measures of well-being (life satisfaction, self-esteem) were all statistically significant ($p < .001$) ranging from .25 to .73, and correlations with negative measures of well-being (chance control, depression) were also statistically significant, ranging from -.30 to -.60 ($p < .001$). Although the scales were intercorrelated, (see Table 2) they differentially correlated with other measures specific to each scale. For example, purpose in life was correlated with self-acceptance (.72), but had a lower correlation with life satisfaction.

Table 2

Intercorrelations of Psychological Well-Being (Ryff, 1989b)

	1	2	3	4	5	6
1. Self Acceptance	1					
2. Positive Relations	0.52	1				
3. Autonomy	0.52	0.32	1			
4. Environmental Mastery	0.76	0.45	0.53	1		
5. Purpose in Life	0.72	0.55	0.46	0.66	1	
6. Personal Growth	0.48	0.57	0.39	0.46	0.72	1

A factor analysis (principal-component, varimax (orthogonal) rotation), resulted in a three factor solution that revealed one factor which was composed most of the original indicators including, internal control, affect balance, life satisfaction, morale, depression, self-esteem, and two factors that represented the new dimensions - self-acceptance and environmental mastery - accounting for half (51.5%) of the variance.

Ryff (1989b) demonstrated that the scale composed of these theory-driven dimensions of psychological well-being had acceptable psychometric properties when used with samples of college students ($n=133$, mean age = 19.53, $SD= 1.57$), middle-aged adults ($n=108$, mean age = 49.85, $SD= 9.35$) and older adults ($n=80$, mean age = 74.96, $SD= 7.11$) from the general population. This approach (Ryff, 1989b) emphasized a long-term focus on a broader concept of positive psychological functioning than instruments of the past, which tended to focus on short term affective changes, rather than enduring purpose and direction in life.

Ryff and Keyes (1995) re-examined the six dimensional structure of psychological well-being, which includes: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. A national sample of 1,108 participants (59% female, 87% Caucasian, mean age was 45.6 ($SD=$

14.8), 70% married) was recruited to examine the model. Two additional data sets were used for comparison purposes (Ryff, 1989b; Ryff, Lee, Essex, & Schmutte, 1994). The surveys were conducted by phone. Participants also answered surveys on happiness, life satisfaction, and depression. The results demonstrated that subscale intercorrelations were modest, ranging from .13 to .46. Confirmatory factor analysis was conducted to examine the fit of the theoretical six-factor model to the data. Final analyses revealed that the six-factor model was the best fit for the data, demonstrating that a latent factor, *psychological well-being*, indicated the other six factors.

Adding to the utility of this instrument, Kashubeck-West and Meyer (2008) established that Ryff's (1989b, 1989a) measure of psychological well-being demonstrated evidence of validity when used with individuals who are late-deafened. In a sample of 138 women who were late-deafened, evidence of internal consistency, convergent validity, and partial discriminant validity was demonstrated. Validity was established by examining correlations of the measure of psychological well-being with three similar instruments and discrimination with one dissimilar instrument. The participants were ages 18 to 65 (mean of 47.46 years; $SD=10.59$), 87% Caucasian, and over half (57%) had a profound hearing loss. Cronbach's alpha for the sample was .97 for overall psychological well-being, with alphas for the subscales ranging from .83 to .93, demonstrating evidence of high internal consistency. Measures of self-esteem and personal growth initiative were positively correlated with the six subscales from Ryff's (1989b) measure of psychological well-being.

Discriminant validity was examined by correlation of the measure of psychological well-being with the Marlow-Crowne Social Desirability Scale (MC;

Crowne & Marlowe, 1964). Results demonstrated evidence of partial discriminant validity for psychological well-being (.30), and three of the subscales, environmental mastery (.38), purpose in life (.23), and self-acceptance (.27) correlated with the MC (Kashubeck-West & Meyer, 2008).

Hearing Handicap Inventory for Adults.

The Hearing Handicap Inventory for Adults (HHIA) (Newman et al., 1990) was created to improve upon measures of severity of hearing loss. Unlike other current measures of the time, this assessment measures latent constructs that tap the emotional and social consequences of hearing loss or perceived severity of hearing loss. Perceived severity is an individualized concept, differing from person to person. One individual's level of hearing loss may be perceived as mild and the same level of loss might be perceived as devastating by another person.

The HHIA is a 25-item, self-report instrument with two subscales - emotional and social/situation. The emotional subscale is comprised of 13 questions (sample item: "Does a hearing problem cause you to feel frustrated when talking to coworkers, clients, or customers?") and the social/situational subscale is comprised of 12 items ("Does a hearing problem cause you difficulty in the movies or theater?"). The scoring system is based on a "yes," "sometimes," or "no" response. The "yes" response is given 4 points, a "sometimes" response is given 2 points, and a "no" response is given 0 points. Final scores range from 0-100, indicating perceived severity of disability, with the higher the score the greater the perceived severity of disability. Although the instrument is based on the Hearing Handicap for the Elderly, modifications were made to update questions and to make questions relevant for a younger population (Newman et al., 1990).

To test the psychometric properties of the instrument, 67 adults were recruited for participation. The participants ranged in age from 18 to 64 ($M = 48.7$; $SD = 12$), 44 (66%) were males and 23 (34%) were females. According to Newman et al. (1990) the majority of the participants had a “sloping high-frequency hearing loss” (p. 430) meaning the higher the frequency the greater the hearing loss. The HHIA demonstrated strong evidence of internal consistency reliability in this sample. Cronbach’s alpha for the total HHIA was .93, for the emotional subscale it was .88, and for the social/situational subscale it was .85. The Pearson product-moment correlation of the HHIA and the subscales were $r = .84$ to $.96$, $p < .01$. To provide evidence of construct validity, mean values for the HHIA as a function of hearing loss severity were also computed. It was determined that as hearing loss increased, HHIA scores also increased ($r = .29 - .35$; $p < .05$) indicating an increase in perceived severity of disability.

Reaction to Impairment and Disability Inventory.

Livneh and Antonak’s (1990) Reaction to Impairment and Disability Inventory (RIDI) measures reaction to adventitious, or an extrinsic, acquired disability. The RIDI is a multidimensional inventory developed to provide information on psychosocial adaptation to disability. The instrument consists of eight scales and 60 items. The scales, with sample items and Cronbach’s alphas, are as follows:

- Shock; 8 items, “I feel frozen, unable to move,” (.79);
- Anxiety; 11 items, “It is difficult to keep my mind on one thing,” (.83);
- Denial; 10 items, “God will cure me, if I improve my behavior and follow his ways,” (.64);
- Depression; 14 items, “My family would be better off if I were dead,” (.88);

- Internalized Anger; 8 items, “My impairment must be a punishment for something I did in the past,” (.81);
- Externalized Hostility; 12 items, “I find myself arguing more with people,” (.84);
- Acknowledgement; 12 items, “I know my limitations and have learned how to deal with them,” (.78); and
- Adjustment; 15 items, “Everything in my life is coming together again,” (.89).

The RIDI is a self-report inventory, based on a four-point Likert-type scale, ranging from 1 (*Never*), 2 (*Seldom*), 3 (*Sometimes*) to 4 (*Often*). Participants are asked to rate how often a specific reaction was experienced. The scales are summed for a global total ranging from 60 to 240, with higher scores indicating a more pronounced reaction to the adventitious disability.

Livneh and Antonak (1990) established the psychometric properties of the RIDI through empirical validation using expert judges to develop initial items and factor analysis to complete the final scales. The authors reported evidence of content validity through an exhaustive review of the literature on measures of, and social and psychological adjustment to, illness and disability. Items for the RIDI were gathered from sources from the literature review and from instruments such as the Beck Depression Inventory (BDI; Beck, 1967) and the Minnesota Multiphasic Personality Inventory (MMPI; Welsch, 1952). Expert judges were used to review the lists and narrow the items.

These lists were then factor analyzed utilizing a sample of 214 individuals with various disabilities. The sample consisted of 80 women and 134 men, ages 16 to 83 ($M = 43.9$; $SD = 17.9$), and 94% were Caucasian. Disabilities included spinal cord injury (34.6%), cerebral vascular accident (CVA) (12.1%), Multiple Sclerosis (7%), Myocardial

Infarction (7%) and amputation (6.1%). Overall, 30 different classifications of disabilities were reported. Most impairments occurred between the ages of 17 and 50 years. The average length of onset of disability was 11.5 years ($SD = 10.5$).

The RIDI was administered twice to all participants to separate any differences between past and present reactions associated with daily hassles and short-term life events and more permanent effects of change due to disability onset. Exploratory factor analysis (principal component analysis) with orthogonal rotation was conducted. The outcome yielded a six factor solution that accounted for 43% of the variance; according to Adams (2007), after consideration, an additional factor was included for theoretical purposes. The Cronbach's alpha coefficients for the factors were as follows:

Acknowledgement-Adjustment (.92); Depression-Internalized Anger (.87); Externalized Hostility .84; Externalized Hostility-Anxiety (.70); Anxiety (.74); and Denial (.70). The original eight factor solution was comparable with coefficients for the factors as follows: Shock (.79); Anxiety (.83); Denial (.64); Depression (.88); Internalized Anger (.81); Externalized Hostility (.84); Acknowledgement (.78); and Adjustment (.89). Inter-item correlations ranged from .15 to .36 on the original eight factor scale and from .32 to .43 on the six factor scale. Although the six factor scale did moderately increase the stability of the original scale, the authors felt that it hindered the clinical and conceptual clarity of the instrument, so the original structure was preserved for further analysis. It was determined that for the eight factor scale, the RIDI was independent of most demographic characteristics with two exceptions: (1) gender was significantly related to the anxiety scale, $F(1,184) = 4.93, p = .028$; and (2) age was related to the internalized anger scale,

such that older respondents experienced internalized anger less frequently than younger participants ($r = -.23, p < .01$).

Evidence of criterion-related validity was provided through comparison of the combined RIDI Acknowledgement and Adjustment subscales to the Acceptance of Disability (AD) scale (Linkowski, 1971). Thirty participants with an onset of disability of three years or longer were chosen as a comparison group. This group was administered both instruments in random order and the scores were examined for correlations. Correlations between the combined 27 item RIDI subscales and the AD were found to be .68, accounting for approximately 45% of the variance.

According to Martz (2004), the Livneh and Antonak paradigm advocates that “adaptation to disability” is comprised of acknowledgement and adjustment. Acknowledgement is the cognitive process of accepting one’s disability and adjustment is the emotional process of accepting one’s disability. For purposes of this study the participants were surveyed on information regarding adaptation to disability, represented by 15 items from the Adjustment (8 items) and Acknowledgment (7 items) scales of the RIDI. As adaptation to disability is hypothesized to be a predictor of psychological well-being, only these items will be needed for analyses.

Ways of Coping Questionnaire.

The Ways of Coping Questionnaire (WoCQ) (Folkman & Lazarus, 1988b; Lazarus & Folkman, 1984) is an instrument used to assess an individual’s specific reaction to stressful contexts and environments. This theoretical measure was specifically designed to examine the function of coping in the relationship between stress and adaptation or stress and psychosocial outcomes. The WoCQ takes a process-oriented

approach, focusing on what a person does in the context of the situation, which varies from environment to environment, and situation to situation. This approach is in stark contrast to the dispositional approach, which focuses on what a person is mostly likely to do consistently across situations, based on personality characteristics.

The WoCQ (Folkman & Lazarus, 1988b; Lazarus & Folkman, 1984) is a 66-item self-report instrument with eight scales. A second order factor analysis categorizes the eight scales into the two factors of problem focused coping (PFC “I tried to analyze the problem in order to understand it better”) and emotion focus coping (EFC “I went on as if nothing had happened”). The response format is a 4-point Likert-type scale where 0 indicates “*does not apply/or not used*,” 1- “*used somewhat*,” 2- “*used quite a bit*,” and 3- “*used a great deal*.”

The WoCQ was originally created from the Ways of Coping Checklist. Rationally constructed scales were created with items selected by expert judges based on the categories of “problem focused” or “emotion focused” coping. The items did not however differentiate between the scales so the rational scales are no longer used.

Empirically derived scales were created through a series of factor analyses with numerous sets of data. The final sample from which the scales were created was composed of 75 married couples who were from the middle to upper-middle class, and who were Caucasian with one child. Participants were interviewed every month for a five-month period regarding the most stressful experience from the preceding week. The data were factor analyzed using principal factoring with oblique rotation, resulting in eight factors. The eight scales and Cronbach’s alphas are as follows:

- Confrontive coping, (.70), sample item: “I expressed anger to the person(s) who caused the problem;”
- Distancing, (.61), “Went on as if nothing had happened;”
- Self-controlling, (.70), “I tried to keep my feelings to myself;”
- Seeking social support, (.76), “I got professional help;”
- Accepting responsibility, (.66), “Criticized or lectured myself;”
- Escape-avoidance, (.72), “Hoped a miracle would happen;”
- Planful problem solving, (.68), “I made a plan of action and followed it;” and
- Positive reappraisal, (.79), “Found new faith.”

Intercorrelations were quite modest, ranging from $-.04$ to $.39$. Emotion focused and problem focused coping were measured through a second order correlation of the Ways of Coping Questionnaire (Dunkel-Schetter, Folkman, & Lazarus, 1987). This factor analysis identified the items belonging to each (EFC and PFC) subscale, on which coping style will be measured. Results of the second order correlation showed that four of the eight subscales belong to the emotion focused coping factor: distancing (6 items), self-controlling (7 items), accepting responsibility (4 items), and escape-avoidance (8 items). The subscales assigned to the problem focused coping factor are planful problem solving (6 items), positive reappraisal (7 items) and confrontive coping (6 items). The seeking social support subscale (6 items) has not been specifically identified as either problem focused or emotion focused, as different items on this scale belong to each factor.

Evidence of test-retest reliability was not offered, as Folkman and Lazarus (1988b) advocated that it is inappropriate for this type of measure. According to the authors, coping is a process that varies and changes over time and from situation to

situation. Folkman and Lazarus offered evidence of convergent validity, as the Ways of Coping Checklist and Questionnaire have both been correlated with numerous other coping instruments. Face validity was provided as items on the scales have been reported by individuals as strategies used to cope in stressful situations. Evidence of construct validity was provided as the results of Lazarus and Folkman's research are consistent with their theoretical position on coping, specifically that coping is a process and that it primarily consists of problem-focused and emotion-focused strategies.

As mentioned earlier, a second order factor analysis classified the subscales into emotion focused coping or problem focused coping. The WoCQ has been used in numerous research studies (Lazarus, 1993).

The WoCQ has been used with samples of individuals with hearing loss. In a study by Andersson and Hagnebo (2003), the WoCQ (Folkman & Lazarus, 1988b) was used to assess the coping strategies of individuals with hearing loss and anxiety sensitivity. According to the results, the most commonly endorsed coping responses were from the problem solving scale (or PFC) and the self-controlling scale. The escape/avoidance strategy was the least used approach and was found to be correlated with anxiety sensitivity ($r = .63$, $p < .0001$). As evidenced by the findings, individuals with hearing loss endorsed a problem-focused approach to coping with stress, which was detected by the WoCQ. In addition, Miklos (2003) documented other research studies, including participants with hearing loss who also endorsed use of the problem-focused approach to coping.

Procedure

First, all procedures and recruitment activities were pre-approved by the University of Missouri-St. Louis campus Institutional Review Board (IRB). Once approved, a recruitment statement and link to the Survey Monkey website containing the surveys for this research project, was sent to listservs sponsored by the Association for Late-deafened Adults (ALDA), Missouri Deaf (MODeaf), and other Deaf-related listserv groups from Yahoo and Google, as well as sites such as Craigslist and Facebook. Once an individual selected the survey link, she or he was presented with parameters of the study, such as purpose, objectives, length of survey, and desired participants (late-deafened). Finally, a consent statement was provided, which the participant executed by taking the survey (clicking the link was acknowledgement that the participant wished to take part in the research).

Incentives were provided in the form of a \$50 VISA gift cards. At the end of the survey, participants had the option of completing a separate entry form for the raffle. All personal information was kept separate, so no identifying information could be linked back to the data. A gift card was raffled about every other month for a total of 6 cards.

Participants were asked to complete the demographic questionnaire first (see Appendix A) (including the question on age of onset of hearing loss), followed by the Hearing Handicap Inventory for Adults, the Reaction to Impairment and Disability Inventory, the Ways of Coping Questionnaire, and the Measure of Psychological Well-being (see Appendix A). It is estimated that the demographic questionnaire and four surveys took approximately 45 minutes to complete.

Research Design

This study followed the quantitative descriptive design format for survey research, such that it characterizes the effects of mediators, specifically, style of coping, on the relationships between predictors, such as adaptation to disability, perceived severity of disability and age of onset on a psychosocial outcome, specifically psychological well-being, for individuals who are late-deafened. The purpose of survey research is to document, explore, or explain a phenomenon or rate of occurrence of particular variables within a specific population (Hepner, Kivlinghan, & Wampold, 1999). Data were collected through self-report surveys via an on-line website (Survey Monkey) specifically designed for research and data collection; incentives were offered to increase participant recruitment.

Statistical Analyses

These data were cleaned and screened for violations of assumptions (normality, linearity, and homoscedasticity) before running the main analyses (Tabachnick & Fidell, 2001). Initially, frequency analyses were conducted to determine the basic demographics of the sample and specific information related to hearing loss, degree of loss and age of onset. Values for measures of central tendency were calculated from these data and a correlation analysis of study variables was conducted.

Structural equation modeling (SEM) was used for the main analyses. It is considered a robust technique, superior to regression when multiple continuous and dichotomous variables are proposed for analysis, as fewer analyses limits Type I error (Tabachnick & Fidell, 2001). Structural equation modeling has four main steps: specification, identification, estimation, and model fit (Tabachnick & Fidell, 2001). To

begin, a hypothesized model must be created and then validated. This is completed through confirmatory factor analysis, which determines how well the observed variables measure the latent constructs. Next is examining and fitting the model. A model is identified if a solution can be found for the parameters, from which a co-variance matrix is calculated. Ultimately, a comparison of the data from the sample and the specified (or hypothesized) model is conducted to determine how well the two correspond. Structural Equation Modeling is the analysis of covariance, which is an examination of the patterns of correlation in the data.

Summary

This chapter has covered the methodology and procedures that were undertaken to examine the effects of coping on the relationships between age of onset, perceived severity of disability and adaptation to disability and the psychological well-being of individuals who are late-deafened. Data were collected using the Measure of Psychological-Being (Ryff, 1989b), Hearing Handicap Inventory for Adults (HHIA; Newman, Weinstein, Jacobson & Hug, 1990), Reaction to Impairment and Disability Inventory (RIDI; Livneh & Antonak, 1990), and the Ways of Coping Questionnaire (WoCQ; Folkman & Lazarus, 1988; Lazarus & Folkman, 1984) in efforts to examine the proposed hypotheses. Demographics and identity information were also gathered to accurately describe the sample. Structural equation modeling was employed to examine the hypothesized relationships.

Chapter IV- Results

This chapter provides a summary of the results, beginning with preliminary analyses. It includes a review of the four hypotheses and findings of the main analyses. Data were analyzed using SPSS (18) (Kinnear & Gray, 2009) and LISREL (8.7) (Byrne, 1998; Joreskog & Sorbom, 2005).

Descriptive analyses revealed that the sample consisted of 202 participants who self-identified as late-deafened adults, with an average age of 50 ($SD=10.99$), who lost hearing at approximately age 32 (range 12-63 years; $SD=12.89$). The majority of respondents (78%) were female, most were heterosexual (92%) and Caucasian (91.4%). The majority of participants reported a profound hearing loss (51%), and 33% reported additional hearing related conditions, such as Meniere's disease and Tinnitus. 67% reported however, that they did not have a secondary condition. Nearly all participants reported that they were late-deafened (94.1%), felt that their hearing loss was a medical condition (77.7%) and a disability (77.7%), endorsing the medical model of hearing loss.

Preliminary Analyses

Preliminary analyses of these data also included an examination of assumptions. Based on the moment coefficient of skewness and kurtosis, most of these data met the standards for statistical assumptions. Ranges between -2.00 to 2.00 for skewness, and 7.00 to 21.00 for kurtosis demonstrate that these data approximated a normal distribution (Byrne, 1998). Although the RIDI adjustment and acknowledgement subscales fell within the range of acceptable limits, the RIDI total scale demonstrated some kurtosis ($kurtosis = 1.61$). The main analyses were conducted through structural equation modeling (SEM),

which is more tolerant of violations of assumptions (> 3.00 for skewness and > 21.00 for kurtosis; Byrne, 1998, p.198), and, therefore, no transformations were conducted.

Subscale means, standard deviations, and Cronbach's alphas and intercorrelations (see Table 2) were explored for the main scales, the HHIA, RIDI, WoCQ and the PWB. Cronbach's alphas for most of the scales ranged from .81 to .97, well within acceptable limits (.70 to 1.00). One PWB subscale, environmental mastery, had an alpha coefficient of .54. This score is below the accepted limit of .70 for internal reliability, indicating that the items on the scale were not reliably measuring the same construct for this sample. Further examination of the subscale revealed that one item loaded onto the factor at .79 and all other items loaded below .70. This subscale, therefore was dropped from the analyses.

Analyses were conducted with the demographic variables and main study variables to determine if the demographic variables were related to severity of disability, adaptation to disability, coping style, or well-being. Pearson's r was used to examine continuous variables, and analysis of variance (ANOVA) was used for examining categorical variables. A p -value of .01 was used to determine significance in order to reduce the threat of Type I error.

Results of these preliminary analyses demonstrated that age of onset of hearing loss was positively correlated with the HHIA total score ($r = .25; p = .000$), indicating that as age of onset increased, so did perceived severity of disability. Affiliation with Deaf culture, as measured by the identity scale, was found to be positively related to the RIDI total (adaptation) ($r = .20, p = .002$), purpose in life ($r = .19, p = .004$), and self acceptance ($r = .18, p = .005$), and negatively correlated with the HHIA total (perceived

severity of disability) ($r = -.19, p = .004$). These correlations indicated that, as affiliation with the Deaf culture increased, so did adaptation, purpose in life, and self-acceptance, and conversely, severity of disability decreased. Affiliation with the hearing culture was not found to be correlated with any main study variables.

Categorical variables were explored using ANOVA. No significant differences ($p = .01$) in psychological well-being, emotion focused coping, problem focused coping, adaptation or perceived severity were found across the variables of gender, sexual orientation, or race. Further analysis revealed that there was a significant main effect for late-deafness on perceived severity of disability $F(1, 201) = 6.98, p = .009$. Participants who identified as late-deafened ($M = 61.38; SD = 24.76$) had higher scores on perceived severity than those who did not identify as late deafened ($M = 42.17; SD = 17.96$). Hearing loss as a medical condition and hearing loss as a disability were found to be significantly related to perceived disability, $F(1, 201) = 8.39, p = .004$ and $F(1, 201) = 17.83, p = .000$, respectively. Participants who identified hearing loss as a medical condition ($M = 62.96; SD = 23.55$), and as a disability ($M = 64.03; SD = 24.27$), reported greater severity of disability compared to those who did not identify hearing loss as a medical condition ($M = 50.91; SD = 27.24$) or as a disability ($M = 47.02; SD = 22.12$). Last, a main effect was found for level of hearing loss on perceived severity of disability $F(1, 201) = 3.10, p = .01$. Post-hoc Fisher Least Significant Difference (LSD) ($p < .05$) revealed that participants who identified as having a moderate-severe hearing loss ($M = 68.33; SD = 23.31$) or severe loss ($M = 68.10; SD = 18.98$), obtained significantly higher scores for perceived severity of disability than participants who had a moderate loss ($M = 50.57; SD = 21.21$), or profound hearing loss ($M = 56.84; SD = 26.46$). The results of the

post-hoc tests indicated that those individuals with moderate-severe or severe hearing loss reported that their perceived severity of loss was significantly higher than those individuals with either a moderate or profound hearing loss.

Kashubeck-West and Meyer (2008) provided scores on psychological well-being for females who are late-deafened. In an effort to examine the well-being of the current sample, comparisons were made between the two samples using *t* tests (see Table 3). Although the comparison sample was comprised only of females, it is the only data available on the well-being of individuals who are late-deafened. These comparisons demonstrated that the PWB subscale scores and PWB total score for this sample were, in general, lower than the scores from Kashubeck-West and Meyer (2008). Specifically, significant differences were found for personal growth, purpose in life, and overall psychological well-being.

Adaptation scores were also examined in comparison to other samples. Livneh and Wilson (2003) conducted a study with individuals with sensory issues (including people with hearing loss). Adaptation, for the current sample (represented by the Acknowledgement and Adjustment scales on the RIDI), was compared to the Livneh and Wilson sample. These data demonstrated that the individuals in the present sample reported lower levels of adaptation, specifically acknowledgement of disability, compared to the sample from Livneh and Wilson (see Table 4).

Last, examination of the recruitment data from this study revealed that about half (51.2%) of the participants found this survey on an internet list-serve: 16.4% received the survey from friends or family, 4.5% found the survey on Face book, 26.4% listed “other” source, and 1.5% reported that they found the advertisement on a flyer. Almost 20% of

the individuals who found the announcement on a list-serve were from different cochlear implant sites, such as Clarion CI, CI @ Yahoo, Cochlear America, CI Family, CI Problems, and CI San Diego. As most individuals who are late-deafened are also cochlear implant users, there were likely more individuals with cochlear implants who went undetected, but completed the survey. Moore and Shannon (2009) documented that most individuals who are late-deafened are also CI users. Overall, about 10% of the participants were known to have CI, but specific data were not collected on CI, so it is likely that the actual number of participants with CI was higher. Based on these figures and lack of data on cochlear implants, it is reasonable to assume that use of CI has some unaccounted affect on these data.

Multiple Imputation (MI; Joreskog & Sorbom, 2005), was used to impute missing values in this data set. Missing data are attributed to the length of the survey and testing fatigue. Through LISREL, an algorithm was created to identify appropriate values for missing data, and these data were imputed into each case with missing data. In other words, values were created based on complete response patterns from participants whose response pattern (other than the variable in question) matched the case with the missing datum. Missing values were generated and inserted into the data set, allowing for retention of 202 cases. This method of imputation was used to determine missing values for the RIDI, HHIA, WoCQ, PWB and the cultural identity items from the demographic questionnaire.

Main Analyses

The main analyses were conducted using structural equation modeling (SEM) in LISREL. The primary goal of SEM is to create and solve two equations: the

measurement model and the final structural model. Through SEM, the latent variables were identified and examined to test the mediation effects of coping on the relationships between age of onset, severity of disability and adaptation to disability, and psychological well-being. The endogenous variable (or the dependent variable) in this model was psychological well-being (represented by the PWB scales); the exogenous variables (or independent variables) were adaptation to disability (represented by the RIDI), perceived severity of disability (represented by the HHIA), and age of onset; the mediators were the two coping styles, emotion focused coping and problem focused coping (represented by the WoCQ EFC and PFC scales).

The data were imported from SPSS (18) to LISREL (8.7) to examine the factor structure for the measurement model, using confirmatory factor analyses (CFA). The indices chosen to examine fit were the Comparative Fit Index (CFI), with a recommended value of .90 or greater, and the Root Mean Square (RMSEA), where a value less than .06 is a good fit, .08 to .10 is a moderate fit, and above .10 is a poor fit. Maximum Likelihood, as it is widely recommended, was used to estimate the parameters of the model. These indices were chosen based on the fact that these data were mostly normal, the sample was about 200 cases, and although the variables were continuous, they ranged in response sets from a four-point scale to a six-point scale.

To represent the latent variable of psychological well-being, five of the six PWB subscales were utilized (autonomy, purpose in life, positive relations with others, self-acceptance, and personal growth). Environmental mastery was eliminated due to low reliability (.54). EFC was represented by five of the eight coping subscales (distancing, self-controlling, seeking social support, self-blame, and escape-avoidance). PFC was

represented by four of the subscales (confrontive, seeking social support, planful problem solving, and positive reappraisal). Seeking social support was used in both coping styles, as the authors instructed that it contained both EFC and PFC items. Severity of disability was represented by the two HHIA subscales, emotional and social. Adaptation to disability was represented by the two RIDI subscales, acknowledgement and adjustment. In addition to the subscales, based on the proposed hypotheses, age of onset was also used in the SEM.

SEM requires a minimum amount of data to measure or estimate latent variables. To comply with this requirement, two variables, the HHIA and RIDI had to be further divided to create a minimum of three subscales to estimate each latent variable. These instruments had two subscales each, which often creates problems with identification for SEM in LISREL. The items from these scales were therefore randomly assigned to create three subscales for each measure. The HHIA was randomly divided into three subscales with factors loading between .80 and .94, well within acceptable limits. The RIDI was also randomly divided into three subscales with factors loading between .93 to .94, also well within acceptable limits.

The result of the modifications was a measurement model with five latent factors and age of onset. The hypothesized model was tested and was rejected. The CFI of .85 was below the acceptable limit of .90, and the RMSEA was .14, which was above the maximum limit of .10. These results demonstrated an unacceptable fit of the measurement model to these data.

Modifications were conducted to improve the fit of the model. After numerous iterations and ongoing poor results, EFC and PFC were examined at the subscale level to

improve fit. The coping data demonstrated low means compared to the estimates provided in the WoCQ manual (Folkman & Lazarus, 1988b). This indicated generally low endorsement of these types of coping for this sample. The subscales for each EFC and PFC were randomly divided into three parcels to see if the fit improved. The measurement model was tested and proved to be a poor fit. The CFI was .79, and the RMSEA was .15, both outside the acceptable limits for these fit indices. The original EFC and PFC subscales were then reintroduced to investigate the coefficients of each subscale. First, the social support items were removed from each subscale, as they showed low loadings in most iterations of the model. This did not significantly improve the model, so additional subscales were eliminated based on loadings. Escape/avoidance and self-blame were removed from EFC, as they loaded at .13 and .18, respectively. Confrontive coping and problem-solving coping were removed from PFC, as they loaded at .44 and .42, respectively.

In the resulting measurement model, EFC consisted of distancing coping and self-confrontive coping, and PFC consisted of one subscale, positive reappraisal. Along with age of onset and the randomized subscales for adaptation and severity, this model also proved to be a poor fit for these data, as the CFI was .85 and the RMSEA was .12.

To improve the estimate of the latent variables EFC and PFC, the scales were examined at the item level to identify acceptable loadings. No items loaded negatively, but a number of items loaded low on both scales. Items below .50 were eliminated and the fit was re-examined. Although the fit was acceptable as the *CFI* was .93 and the *RMSEA* was .09, item elimination continued until the best fit for the model was identified. Items at .53 and below were eliminated.

The final EFC coping scale consisted of two items from the self-blame subscale, five items from the escape-avoidance subscale, and one item from the distancing coping subscale. The PFC coping scale consisted of four items from the positive reappraisal subscale, and five items from the planful problem solving subscale. Thus, PFC confrontive coping and PFC items from the seeking social support subscale were eliminated. Eliminated items from the EFC scale consisted of the self-controlling coping scale, most of the items from the distancing subscale, and the EFC items from the seeking social support subscale. Five of the eight subscales were represented by the redesigned EFC and PFC subscales.

The measurement model then contained age of onset, the randomized severity and adaptation subscales, the redesigned EFC and PFC scales, and the five psychological well-being subscales. The final measurement model (see Figure 1) yielded a *RMSEA* of .08, and *CFI* of .90, both within acceptable limits, indicating a good to moderately good fit for these data (Byrne, 1998).

To examine mediation, there must first be direct relationships between the latent variables in question. Examination of the direct relationships (see Figure 2) showed that severity of disability ($B = -.35$) and adaptation to disability ($B = .39$) were significant predictors of psychological well-being. Age of onset ($B = .03$) did not have a meaningful relationship with psychological well-being, eliminating the possibility of mediation of the relationship.

Next, the SEM structural model analysis (see Figure 3) was carried out to examine mediation of the relationship between severity of disability and psychological well being, and the relationship between adaptation to disability and psychological well-

being. Once coping was introduced, the model showed that these relationships were affected. EFC was found to mediate the relationship between severity of disability and psychological well-being ($B = -.60$), rendering the direct path from severity of disability and psychological well-being non-significant ($B = -.07$). EFC, however, did not mediate the relationship between adaptation to disability and psychological well-being. Although there was a direct relationship between adaptation and psychological well-being ($B = .39$), the relationship between adaptation and emotion focused coping was not meaningful ($-.04$), eliminating the possibility of mediation of this relationship. Last, problem focused coping mediated the relationship between adaptation and psychological well-being ($B = .46$), rendering the direct relationship between the two latent variables non-significant ($B = .06$). This structural model yielded an *RMSEA* of .08, *CFI* of .90, and the Akaike Information Criterion (AIC) for the model was 1013, demonstrating a good to moderately good fit for these data.

Last, the model was examined with only the mediated relationships to determine if this model was the best fit for these data compared to first structural model (see Figure 4). The fully mediated model yielded an *RMSEA* of .08, *CFI* of .90 and an AIC 1013 (see Figure 5). Next a chi-square difference test was conducted to determine which model was more parsimonious. The chi-square difference was $X^2(3) = 10.33, p = .05$. The fully mediated model (see Figure 5) was significantly different than the full structural model (which included direct and indirect paths) (see Figure 4). Based on the fully mediated model, the direct paths were superfluous to explaining or fitting the model to these data. These results demonstrated that the fully mediated model is a better fit for these data, therefore, more parsimonious, and the final model (see Figure 5) for this study.

Hypothesis Testing

The four main hypotheses of the study were based on coping style mediating the relationships between the three predictors and psychological well-being. The SEM analyses above provided the results related to the four hypotheses.

H¹: Emotion focused coping will mediate the relationship between age of onset and psychological well-being. Operationally, increased age of onset will predict higher scores on the WoCQ, EFC subscale, which, in turn, will predict lower scores on the PWB Scale. This hypothesis was not supported as the direct relationship between age of onset and psychological well-being ($B = 0.03$) was not meaningful. When coping was introduced into the model the relationship between age of onset of hearing loss and emotion focused coping ($B = -.15$), was again so low that it was still not meaningful. Therefore the predicted indirect effect on psychological well-being was not supported ($t = -1.77$; $p = .074$; $R^2 = .20$).

H²: Emotion focused coping will mediate the relationship between perceived severity of disability and psychological well-being. Operationally, greater HHIA scores will predict higher scores on the WoCQ, EFC subscale, which, in turn, will predict lower scores on the PWB Scale. A direct relationship between perceived severity of disability and psychological well-being was identified ($B = -.35$). The structural model analysis demonstrated that when emotion focused coping was introduced the relationship between EFC and psychological well-being was significant ($B = -.60$), and the direct relationship was between severity of disability and psychological well-being was reduced to non-significance ($-.07$), which supported the second hypothesis. Thus EFC mediated the relationship between severity of disability and psychological well-being, such that as

severity increased, emotion focused coping increased, which in turn, was associated with decreased psychological well-being.

H³: Emotion focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, lower RIDI scores will predict higher scores on the WoCQ, EFC subscale, which, in turn, will predict lower scores on the PWB scale. A direct relationship between adaptation and psychological well-being ($B = .39$), was initially identified. The structural model analysis demonstrated that, when emotion focused coping was introduced, the relationship between adaptation and EFC was not meaningful ($B = -.04$). Mediation of a relationship is only possible if there is an initial direct relationship between the predictor and outcome; predictor and mediator; and the mediator and outcome. All three relationships must exist for mediation to take place. Unfortunately, the relationship between the predictor and mediator was non-significant, eliminating the possibility of mediation in this relationship.

H⁴: Problem focused coping will mediate the relationship between adaptation and psychological well-being. Operationally, greater scores on the RIDI will predict higher scores on the WOCQ, PFC subscale, which in turn, will predict higher scores on the PWB scale. A direct relationship between adaptation and psychological well-being ($B = .39$) was initially identified. The structural model analysis demonstrated that when problem focused coping was introduced, the relationship between PFC and PWB was significant ($B = .46$), and the direct relationship between adaptation (RIDI) and psychological well-being was then non-significant ($B = .06$), which supported the fourth hypothesis. This result demonstrated that PFC mediated the relationship between adaptation and psychological well-being, such that greater adaptation was associated with

increased use of PFC, which, in turn, was associated with increased psychological well-being.

Summary

The final analyses supported two of the four predicted hypotheses (see Figure 4), as the exogenous variables demonstrated meaningful relationships with both the mediators and the endogenous variable. The model supported the mediation effects of coping, as hypothesized, between two of the disability-related variables and psychological well-being. Emotion focused coping was found to mediate the relationship between severity of disability, and psychological well-being; and problem focused coping was found to mediate the relationship between adaptation and psychological well-being.

Chapter V: Discussion

Hearing loss, a chronic condition, documented as the most prevalent disability in the U. S. population (Leigh et al., 1996), has been negatively associated with health and well-being (Barlow et al., 2007). In addition, De Graff and Bijl (2002) noted that individuals who are late-deafened are more likely to view themselves as handicapped compared to individuals who have lost hearing earlier in life. They may therefore experience emotions such as loss, depression, guilt, issues of acceptance, helplessness, and at times, social isolation. Often times, individuals who are late-deafened do not develop a sense of belonging to the pre-lingually deaf world, nor do they feel an attachment to the hearing world, where they used to belong. They are trapped between two worlds, socialized as hearing individuals, now living in a D/deaf world, where they must develop different coping styles to manage stress (Barlow et al., 2007).

According to adaptation theory (Diener et al., 2006; Lucas 2007), there may be disabilities or conditions that are too difficult to adjust to, ultimately affecting the process and outcome of adaptation. Previous studies have demonstrated that adaptation (e.g., Livneh, 2001; Livneh & Antonak, 1997; Livneh & Antonak, 2005; Livneh & Cook, 2005; Livneh et al., 2004; Lucas, 2007), severity of disability (e.g., Bess et al., 1989; Dalton et al., 2003; Kelly-Moore et al., 2006; Livneh & Wilson, 2003; Lucas 2007), and age of onset of hearing loss (e.g., Jambor & Elliot, 2005; Kelly-Moore et al., 2006; Kazdin, 2000; Mona et al., 1994; Polat, 2003) are related to coping and psychosocial outcomes of individuals with disabilities, including those with hearing loss.

Understanding the relationships between the disability-related characteristics, coping, and psychosocial outcomes is particularly important to facilitate quality of life

and well-being, to the greatest extent possible. It is clear from the results of the present study that not all individuals adapt equally to different disabilities and conditions. This is the second such study (including Kashubeck-West & Meyer, 2008) that demonstrated the well-being of individuals with hearing loss is significantly lower than that of the general population. Understanding the factors that affect psychosocial outcomes, such as coping and adaptation, may facilitate the development of interventions that address quality of life, including the well-being and happiness of individuals with chronic conditions.

Results

Two of the four hypotheses of this study were supported by the final analyses. The first hypothesis examined the effect of coping on the relationship between age of onset and psychological well-being. Previous research (Livneh & Antonak, 2005; Livneh & Wilson, 2003) showed that coping has direct and mediated effects among various predictors and psychosocial outcomes. In the present study, however, emotion focused coping failed to demonstrate mediation of the relationship between age of onset and psychological well-being. A number of studies have documented coping as a mediator of this type of relationship, and age of onset as a significant predictor of psychological well-being (Jambor & Elliot, 2005; Kelly-Moore et al., 2006). The results of the structural equation model from the present study did not support these previous results. In addition, age of onset failed to have a significant relationship with adaptation to disability or psychological well-being, for this sample.

Previous research (Hallberg et al. 2005) has shown that age of onset may not always act as predictor of psychosocial outcomes. Hallberg et al. documented that unless age of onset is related to audiological outcomes, it may not prove to be a significant

predictor, specifically for individuals with hearing loss. The present study did not examine age of onset in relation to audiological outcomes, but rather examined age of onset as a predictor of PWB. Furthermore, Kelly-Moore et al (2006) explained that age of onset can affect post-injury identity development, and recent documentation has shown that identity development for individuals with hearing loss is quite unique, and different from the general population, which may explain the unexpected results related to age of onset.

Leigh (2009) documented that individuals who are late-deafened go through an identity shift, and struggle with cultural belongingness. Individuals who are deaf, but are part of the hearing culture however, may experience emotional turmoil when negotiating issues of identity, as they may be denying their deafness. Yet, there are those who are deaf who report that they are perfectly happy in the hearing culture (Leigh, 2009).

Maxwell-McCaw and Zea (in press) documented that many individuals who are deaf have aligned themselves with both cultures, and are now bi-cultural. Belongingness and identity continue to be convoluted issues for individuals who are deaf. Therefore, it is possible that age of onset for individuals with hearing loss may not be detected as a significant predictor, as identity development (which has been documented as related to age of onset) perhaps plays a larger role predicting outcomes, post-onset, for individuals with hearing loss.

The second hypothesis examined the effects of coping on the relationship between severity of disability and psychological well-being. Research by Bess et al. (1989), Dalton et al. (2003), and Kelly-Moore et al. (2006), documented the relationship between severity of disability and psychosocial outcomes. Kelly-Moore et al. (2006)

specifically documented the relationship between perceived severity of disability and psychosocial outcomes. The present study supported these findings, as severity of disability had a direct negative relationship with psychological well-being, indicating that as severity increased, psychological well-being decreased. Importantly, the relationship of severity to psychological well-being was fully mediated by EFC. Thus, as severity increased so did EFC. Higher EFC was predictive of lower psychological well-being. According to De Graff and Bijl (2002), individuals who are late-deafened are more likely to view themselves as handicapped compared to individuals who have lost hearing earlier in life. An increased sense of severity of disability has been associated with emotions such as loss, depression, issues with acceptance, guilt, helplessness, and at times, social isolation, leading to greater feelings of helplessness.

The purpose of EFC is to change how one attends to the environment (with vigilance or avoidance), or change the meaning or perception of the situation. In certain situation where one has little control over the circumstances, reframing the situation can be advantageous, as there are times when taking action can be counter productive, adding to an already stressful situation (Lazarus, 1993). Helplessness, or the inability to effect change, has been linked to greater use of emotion focused coping, and although emotion focused coping is considered functional in the short-term, over time emotion focused coping has generally demonstrated negative psychosocial outcomes, which appears true for this sample of individuals who are late-deafened. As severity increases, therefore, it is reasonable to expect a shift to emotion focused coping to manage increased stress, even though long-term outcomes related to this style of coping (EFC) are poor.

The third and fourth hypotheses examined the mediation effects of coping on the relationships between adaptation to disability and psychological well-being. As mentioned earlier, a few authors have extensively researched adaptation to disability, including coping as a predictor and mediator of psychosocial outcomes (e.g., Livneh & Antonak, 1990, 1997, 2005; Livneh & Cook, 2005; Livneh et al., 2004; Livneh & Wilson, 2003; Lucas, 2007; and Martz, 2002, 2004). This research demonstrated that adaptation to disability was a predictor of psychological well-being, and coping was a predictor and mediator of psychosocial outcomes, such as psychological well-being. Following suit with previous research, the present study demonstrated meaningful relationships among adaptation to disability, problem focused coping and psychological well-being.

These results however failed to demonstrate a meaningful relationship between adaptation to disability and emotion focused coping. It was hypothesized that emotion focused coping would mediate the relationship between adaptation to disability and psychological well-being, such that decreased adaptation would be associated with greater use of EFC, which, in turn would be associated with decreased psychological well-being. Late-deafness is considered to be a chronic condition that can fluctuate, and is often degenerative. It is also considered unique because it is acquired later in life, and therefore will require psychosocial adaptation, unlike other disabilities acquired prior to birth or early in life.

Although adaptation did demonstrate a meaningful relationship with psychological well-being, which has also been documented in previous studies, it did not demonstrate a relationship with emotion focused coping. Adaptation can be a lengthy

process, and for some, adaptation to more severe disabilities may not be attainable.

Research has shown that if a situation is considered “fixed” or beyond influence, emotion focused coping will be utilized to decrease stress, yet this study failed to demonstrate that relationship.

Through further analysis it was determined that severity of disability and adaptation were related ($r = -.38$). The relationship between these two factors may have had unexpected effects on the relationship between adaptation and the mediator, emotion focused coping. Based on the results of the structural model, further examination of the relationship between severity of disability and adaptation is warranted. Perhaps severity of disability is mediating the relationships adaptation has with other disability related variables. As individuals with late-deafness experience difficulty with adaptation, it is possible that another type of coping is utilized to manage stress.

Last, these results demonstrated that greater adaptation to disability was related to problem focused coping, which in turn was related to increased psychological well-being. Problem focused coping (PFC) is a self-directed, active coping approach, with a focus on changing the person-environment relationship. Ultimately, through a plan of action, change is expected to mitigate the stress experienced by the individual. Livneh and Antonak (2005) acknowledged that for the CID population, passive approaches to coping, such as avoidance or denial are less successful compared to approaches that are action oriented, such as problem solving. Previous research has shown that problem focused coping has been related to greater well-being, and more successful adaptation to disability. The present study supported that PFC mediated the relationship between adaptation to disability and well-being, leading to higher levels of psychological well-

being. For those individuals who feel they are able to effect change, PFC appears to be related to positive psychosocial outcomes.

Coping has been shown to be fluid and to fluctuate over time to meet the demands of the situation or context, allowing for adaptation (Livneh & Antonak, 2005). Folkman and Moskowitz (2004) documented that a majority of studies demonstrated, that although in the short-term, emotion focused types of coping are helpful, in the long-term they are associated with greater distress. Active forms of coping have been documented as more adaptive, which is especially true for individuals with CID, including hearing loss (Folkman & Moskowitz, 2004; Livneh & Antonak, 2005).

Two of the four hypotheses were supported by the results of this study. The fully mediated structural equation model (see Figure 5) demonstrated that emotion focused and problem focused coping mediated the relationships between severity of disability and psychological well-being, and adaptation to disability and psychological well-being. This combination of variables proved to be a moderately good model to describe the mediation effects of coping on the relationships between disability-related characteristic and psychological well-being.

Holding with previous research, this study established that there is a relationship among EFC, severity of disability and psychological well-being. This relationship may be based on the fact that those individuals who perceive less ability to effect change, turn to EFC to manage stress. Individuals with higher levels of severity of disability (and lower adaptation) may experience more anxiety due to less control in life. Andersson and Hagnebo (2003) explained that when dealing with anxiety, individual with hearing loss have a tendency to use emotion based coping. Hearing loss not only affects the

perception of sound, but many other areas of life, including social dimensions (risk of ridicule and misunderstanding) and loss of daily living skills (such as attending to basic warning sirens). In addition to the fear and anxiety of becoming deaf, individuals with hearing loss may have good reason for heightened levels of anxiety, based on loss of basic and social functions. Anxiety related to hearing loss may be one reason why EFC is chosen to mediate stress. Reducing anxiety in the moment may be more important to individuals who are late-deafened, than long-term outcomes.

The relationships between severity of disability and PFC, however, resulted in higher levels of psychological well-being. Previous research documented that PFC is more functional and is related to greater psychosocial outcomes. This appears to also be true for individuals who are late-deafened, as PFC was related to greater psychological well-being in the present study.

These findings demonstrated that coping styles have significant relationships with psychosocial outcomes, such as well-being. Understanding these relationships can facilitate one of the main goals of rehabilitation, which is to improve the well-being and quality of life for individuals with chronic illness and disabilities.

In addition to the main analyses, the results revealed significant relationships among a few demographic and disability related variables. Severity of disability was found to be significantly related to late-deafness. Participants who identified as late-deafened demonstrated greater perceived severity of disability than those who did not identify as late deafened. This finding is in line with previous research that established that individuals who are late-deafened perceive a greater degree of handicap, compared to individuals who lost hearing earlier in life. In other words, having late-deafness is related

to higher perception of severity of disability or handicap, and in turn, greater severity of disability has been related to poor adjustment to disability. These factors in combination, may lead to greater risk of mental health problems, and increased psychosocial challenges.

Furthermore, hearing loss as a medical condition, and hearing loss as a disability were found to be significantly related to perceived severity of disability. Participants who identified hearing loss as a medical condition and as a disability reported greater severity of disability, compared to those who did not identify hearing loss as a medical condition or as a disability. These relationships are in line with the medical model, which views hearing loss as a medical condition and a disability. It is logical to expect that individuals who view hearing loss as medical condition and disability also report greater severity of disability in comparison to individuals who do not view this condition as a disability, which is more in line with Deaf culture. Deaf culture does not view hearing loss as a disability or medical condition, but as one of many characteristics of a person to be respected, just like race or ethnicity.

Last, level of hearing loss was found to be related to perceived severity of disability, such that individuals who reported having a moderate-severe or severe hearing loss also reported higher scores for perceived severity of disability compared to participants who had a moderate or profound hearing loss. These results indicated that those individuals with moderate-severe or severe hearing loss reported that their perceived severity of loss was greatest, in comparison to individuals with lower or higher levels of physical hearing loss. It is possible that individuals with moderate-severe and severe hearing loss are on the borderline of functional hearing, as they have

approximately a 50% or greater hearing loss. They may be more aware of the sounds that they cannot discern, than those with profound loss, but have less functional hearing than individuals with lower hearing loss. This means that they may hear just enough to be acutely aware that they are missing pertinent information, making these levels of hearing loss less functional and more frustrating, in turn, contributing to greater perceived severity of disability.

Psychological well-being was examined by comparing the sample from the Kashubeck-West and Meyer (2008) study to the present sample of individuals with late-deafness. These comparisons demonstrated that the PWB subscale scores and PWB total score for this sample were lower than the scores from Kashubeck-West and Meyer. Specifically, significant differences were found for personal growth, purpose in life, and overall psychological well-being. Importantly, Kashubeck-West and Meyer found that their participants scored lower on psychological well-being than individuals from the general population. Therefore, this is the second study with findings that demonstrated the psychological well-being of individuals with late-deafness is lower than that of the general population. A primary goal of rehabilitation is to address well-being and quality of life. Exploring areas of personal growth and purpose in life maybe instrumental in improving overall quality of life for individuals who are late-deafened.

Adaptation was also examined in comparison to data from the Livneh and Wilson (2003) study, which examined individuals with sensory issues (including hearing loss). The results demonstrated that the individuals in the present sample acknowledged less disability than the sample in Livneh and Wilson (see Table 4). Lower levels of acknowledgment of disability indicate issues with the cognitive process of accepting

one's disability. Lack of acceptance of disability can make daily living and planning future endeavors challenging for individuals with chronic conditions. Lack of consistent management or monitoring of one's condition may affect overall adaptation, or the length of the adaptation process, which in turn can affect many psychosocial outcomes, including well-being. Lack of acknowledgement has been related to difficulties, such as depression, loss, guilt, isolation and helplessness. Cognitive or cognitive-behavioral interventions may be beneficial in these situations.

These results demonstrated that the participants from the present study reported greater perceived severity of disability, greater difficulty with adaptation to hearing loss, and in general, lower levels of psychological well-being. These factors may indicate difficulty with quality of life and happiness, which are primary goals of rehabilitation for individuals with chronic illness or disability. Overall these results are consistent with the theory of adaptation, as individuals with late-deafness demonstrated lower levels of well-being, adaptation to disability, and greater perceived severity of hearing loss, than comparison samples. Considering the level of severity experienced, and lack of acknowledgement of disability, complete adaptation to late-deafness may be limited.

Research Implications and Future Directions

The results of this study imply that future research on individuals with late-deafness should be concerned with coping styles to manage stress and improve important psychosocial outcomes, specifically psychological well-being. Quality of life, as a main focus of rehabilitative efforts for individuals with CID, may mean many different things to individuals who experience chronic conditions. Attending to coping style may influence how stress management affects short and long-term outcomes for individuals

with CID, regardless of the difference in defining quality of life, which is individualized, and often dependent upon injury, illness or condition.

Continued exploration of the possible interaction between age of onset and deaf identity development is warranted. According to Kelly-Moore et al.2006, age of onset is related to identity development, post-injury and/or illness. Furthermore, Leigh (2009) and Maxwell-McCaw and Zea (in press), established the uniqueness of deaf identity development, which is now receiving in-depth exploration. The relationship between these two variables may be most informative for predicting psychosocial outcomes for individuals who are late-deafened. Further research will need to be conducted to determine what, if any effect age of onset of hearing loss has on psychosocial outcomes for individuals who are late-deafened.

It appears from the results that EFC maybe a useful short-term form of coping for individuals who are late-deafened. Although repeated studies show that this approach to coping has been related to poor psychosocial outcomes, individuals with CID continue to endorse the EFC approach to managing stress. As documented by Andersson and Hagnebo (2003), individuals with hearing loss have high levels of anxiety, which may limit their perception to effect change, resulting in the choice of a coping style that alleviates immediate distress, but is not beneficial over time. Reducing anxiety in the moment may be more important to individuals who are late-deafened, than long-term outcomes. Research is needed on how and when EFC may be helpful for individuals with late-deafness.

Problem focused coping continues to be a promising approach to stress management for individuals with hearing loss, including those with late-deafness. Time

and time again, PFC has been related to positive psychosocial outcomes, including psychological well-being. Consistent with past research, this sample showed strong relationships among PFC, adaptation to disability, and psychological well-being. Future examination of factors that foster the ability to effect change, resulting in the use of PFC styles, may lead to an increase in well-being and quality of life for individuals with hearing loss.

Future research on coping styles and psychometrically sound instruments to measure coping may further the understanding about the decision making process related to coping, and use or function of different styles of coping, for individuals who are late-deafened. A longitudinal study would be helpful to determine how coping is utilized over time.

Discovered well into the study was the lack of information on cochlear implants (CI). Originally, CIs were viewed as a communication aid, but they have turned out to be much more than that. Participants specifically from CI list-serves commented on the benefits of CI, and how they felt it contributed to well-being. Over time and through advancement in research, CIs have become a viable option for more individuals who are deaf. The latest research documented that 31.5 million individuals in the U.S. have some degree of hearing loss (Brennan & Bally, 2010), and as of 2009, at least 120,000 individuals with hearing loss have a cochlear implant (Moore & Shannon, 2009), most of whom were late-deafened.

As mentioned in the results, it is likely that at a minimum, 10% - 20% of the participants had cochlear implants. A few studies have been conducted on the benefits of cochlear implantation with regard to well-being (Faber & Grontved, 2000; Hallberg &

Ringdahl, 2004; Hallberg et al., 2005; Ross & Lyon, 2007; Stephens, Ringdahl, & Fitzmaurice, 2008). Most of these studies were qualitative in design and examined practical, social and emotional benefits of the implants, such as increased social interaction, resuming a normal life, increase in self-confidence, increased communication, improved quality of communication, and improved well-being and quality of life. Drawbacks of CI were also noted, but most studies documented a 90% or higher degree of satisfaction with CIs. Due to the high use of CI by individuals who are late-deafened, future research should include some component on cochlear implants, as it may have a meaningful relationship with and significant impact on psychological well-being and quality of life.

As hearing loss is an invisible disability, individuals often are more reluctant to acknowledge the condition or limitations. One study (Ross & Lyon, 2007), specifically documented problems with, and coping strategies for, hearing loss. Although acknowledgement is part of the adaptation process, denial of the condition as a coping strategy may somehow facilitate the adaptation process. According to Ross and Lyon (2007), denial and self-deception have been documented as coping strategies to maintain self-image for individuals with hearing loss. The present study however, demonstrated that this sample showed low levels of acknowledgement, therefore examination of acknowledgement of disability may provide insight into the types of interventions most appropriate to address facilitation of overall adaptation, specific to individuals with hearing loss.

Finally, in future research, additional efforts should be focused on recruiting male participants, as this is the second study on late-deafness and well-being that yielded

significantly fewer male participants. Inclusion of more male participants will reveal a more well-rounded assessment of the population as a whole. Additional research on the social implications of hearing loss may also greatly benefit studies examining psychosocial outcomes of hearing loss. The implications of hearing loss affect most environmental and social domains. According to Aguayo and Coady (2001) the social and emotional impact of hearing loss is devastating to the individual experiencing the loss, as well as to family and friends. There are great difficulties when interacting socially, and social gaffes are common due to difficulty with attending to social cues. Resulting humiliation leads the person to withdraw socially and limits the ability to develop new coping techniques. Including research on the social implications of hearing loss in future research would foster empathy and greater understanding of the global impact of this chronic condition.

Counseling Implications

The meaningful factors in this study were determined to be severity of disability, adaptation to disability, approach to coping, and psychological well-being. Research studies have documented that these factors, independently, and in combination with one another, impact the quality of life and well-being of individuals with hearing loss. Quality of life is a primary focus of rehabilitation efforts and should be addressed by counselors to influence psychosocial outcomes for individuals who are late-deafened.

The present study documented that coping played a significant role by mediating relationships between disability characteristics and psychological well-being. According to Livneh and Wilson (2003), understanding coping is essential to understanding the

process of adaptation to disability, which in combination affect psychosocial outcomes, such as well-being.

After revisions to the coping scales, the remaining styles (or subscales) of coping for EFC consisted of self-blame and escape/avoidance coping (i.e., “I hoped a miracle would happen”), and PFC consisted of positive reappraisal and problem solving (i.e., I made a plan of action and followed it”). Future interventions and rehabilitation efforts should target PFC approaches to capitalize on coping styles that improve psychological well-being, and target reduction of EFC approaches to ameliorate long-term negative affects on well-being.

This sample of individuals endorsed the use of EFC to manage stress, which has been found in previous CID studies. EFC is known to be functional in the short-term; however, long-term it has been linked to poor psychosocial outcomes. Choice of coping and stress management for individuals who are late-deafened may be associated with high levels of anxiety. According to Andersson and Hagnebo (2003), individuals with hearing loss experience high levels of anxiety, which may trigger the use of EFC. Counselors may consider assessing and targeting anxiety to decrease stress, and increase the perception of choice, allowing for greater selection of coping style to manage stress. Coping is a process, and as such, changes over time. These changes may allow counselors to affect the process and when appropriate, advocate for the use of problem focused techniques, which are related to more superior, long-term outcomes, specifically well-being and quality of life. Counselors may want to explore different problem-directed coping strategies in efforts to improve long-term outcomes.

Emotion focused coping, however, should be respected as an approach to stress management, as it is functional in the short-term, and beneficial when little control can be exerted over a crisis. It is likely that both types of coping are used at some point in the process of adaptation to disability. Understanding where a client is in the process of adaptation will prove useful for deciding on appropriate coping intervention for stress management.

Addressing perceived severity of disability may also be helpful for individuals with hearing loss. Increased severity of disability has also been linked to poor psychosocial outcomes, including psychological well-being and adaptation. Negotiation of stress through active coping styles (e.g., PFC or Solution Focused Therapy) that increase perception of control may alleviate some struggles due to perceived severity of disability, for individuals with late-deafness.

According to Kashubeck-West and Meyer (2008), and the present study, the psychological well-being of individuals who are late-deafened is significantly lower than the general population, again indicating that the revised theory of adaptation (Diener et al., 2006) holds true for this population of individuals who are late-deafened. When working with clients, Kashubeck-West and Meyer recommended that counselors affirm client experiences, rather than encouraging clients to “get over” their injury or illness. Counselors should understand that CID can greatly impact an individual’s happiness and well-being, and finding ways to better cope with the environmental stressors can directly and indirectly affect psychological well-being. This study revealed that severity of disability and adaptation are indicators of psychosocial outcomes, and that coping

mediates the relationships among the factors affecting the well-being of individuals who are late-deafened.

In addition, Moore and Shannon (2009) suggested that counseling or rehabilitative efforts for individuals with hearing loss should include auditory training, as it is central to success for individual with assistive listening devices; however, it was also recommended that future studies examine cognitive processes. Focusing on one aspect of rehabilitation to hearing loss will not facilitate the maximum level of adaptation for individuals who are late-deafened. A multi-level approach to rehabilitation has been recommended, as adaptation to hearing loss is a complex issue, and individualized support services are critical to long term success. Ross and Lyon (2007) pointed out that collaboration of professionals around hearing loss is also an area of need for this population.

Hallberg et al. (2005) acknowledged that counselors should be aware that hearing restoration can create significant changes on an individual level, but may not appear to when comparing psychosocial outcomes to the general population. Even with the use of CI, the impact on psychological well-being does not mirror that of a non-patient population, as hearing loss can have long-term negative effects. As with any client, it is important for counselors to determine how the individual feels about his or her progress and outcomes, prior to making decisions about the client's feelings, or providing interpretation of assessments.

In general, awareness of cultural affiliation and educational experiences will help facilitate counseling interventions (Fraser, Hansmann, & Saladin, 2009). Understanding the perspective and values of individuals with hearing loss (especially Deaf culture) helps

to establish credibility and rapport with clients. Olson, Pugh, and Bishop (2009) stressed the continued need for counselor training and education on hearing loss and assistive technology, such as cochlear implants. The authors documented low counselor knowledge of implants, and of factors affecting psychosocial outcomes of individuals with hearing loss.

The most recent statistic estimated that 31.5 million individuals in the U.S. have some degree of hearing loss (Brennan & Bally, 2010), most of whom are late-deafened. Considering the recent estimates of hearing loss, it is most likely that counselors will provide services to individuals with some degree of hearing loss. Understanding culture, past experiences, adaptive equipment, adaptation to disability, coping styles, recently documented changes in cognitive processes, in addition to factors that affect (predict and mediate) psychosocial outcomes, is imperative to understanding the experiences and needs of individuals with late-deafness.

Limitations

Survey research by nature is generally subject to various threats to internal validity as there is no experimental control, randomization of groups, or manipulation of the independent variable. No causal link can therefore be inferred between the predictor or mediator variables and the criterion variables in this research. In addition, there is a threat to construct validity from mono-method bias, as each instrument and the demographic questionnaire are all self-report surveys delivered via the Internet.

Participants in this study were volunteers who chose to complete the surveys and demographic information. An issue that plagues survey research is the concern that individuals who volunteer for research are different in important ways from those who do

not volunteer. Although self selection is known to be a limitation of survey research, use of the Internet for communication is common practice among individuals who are deaf. The overall population of individuals who are deaf is known to use technology to a large degree to communicate (MSM Productions, 2003). The advent of computers and webcams have increased access to communication for this population, increasing the representation of the population within the sample. As an Internet survey, individuals were recruited through D/deaf related web sites, associations such as the ALDA and HLA, and more general sites, such as Craig's List, face book and Yahoo were targeted to increase the likelihood of obtaining a more representative sample of the deaf population.

The degree of data loss was a limitation in this study. Of the 454 participants surveyed, only 202 cases (44.5%) met inclusion criteria and had enough data to be utilized. Kashubeck-West and Meyer (2008) reported about a 48% retention rate (after dropping male participants) from their first study on late-deafness and well-being. Most cases from the present study were dropped due to hearing loss at an early age (35%) or missing data (13%). Although the selection criteria were clearly stated multiple times, numerous individuals who did not meet the age of hearing loss criterion still responded. Such responsiveness may indicate significant interest in the topic, a desire to have one's experiences included, or some other unidentified reason.

In addition, the modifications of the EFC and PFC scales in this study are completely specific to this sample, limiting the generalizability of these results to the population of individuals with late-deafness. These scales were modified based on response style and loading factors specific to this sample, and would have to be replicated to determine if these results can be generalized to the population of individuals who are

late-deafened. Finally, these data demonstrated low endorsement of these styles (EFC & PFC) of coping for individuals who have late-deafness, meaning that these approaches are not used a great deal by the individuals who completed the survey. Other measures of situational coping should be explored to further examine coping in this population.

Some of the individuals who explored and/or took the survey reported that they felt it was not applicable to their particular situation, or that the entire survey was irrelevant and completely missed the experience of hearing loss and/or late deafness (including lack of data on CI). This information is being included to document the experiences of these individuals in efforts to continue joint exploration of topics pertinent to individuals who are late deafened.

Based on previous research, it was reasonable to find that individuals with late-deafness reported: higher levels of perceived severity of disability; greater difficulty with adaptation; hearing loss as a medical condition; and hearing loss as a disability, which ultimately was related to lower levels of psychological well-being. These factors, in combination with endorsement of the EFC style, leads to questions regarding the perceived ability of individuals with late-deafness to effect change and manage stress in the long-term. Taken as a whole, these results indicated further need to continue exploring approaches to coping and stress management.

Summary

In summary, this study documented that coping style mediates the relationships between disability related characteristics and psychosocial outcomes, specifically psychological well-being. Also found was significantly lower levels of psychological well-being of this sample, compared to Kashubeck-West and Meyer (2008). Additionally,

results showed that the level of adaptation of this sample was significantly lower than the sample from Livneh and Wilson (2003). These results demonstrate the need for interventions targeting coping styles of individuals with hearing loss.

Development of coping styles that are more active, such as PFC, may improve numerous psychosocial outcomes, including the psychological well-being of individuals with late-deafness. Counselors are encouraged to study disability culture and Deaf culture, just like any other minority culture, as hearing loss creates unique challenges, not easily understood by the majority.

References

- Adams, D. L. (1969). Analysis of a life satisfaction index. *Journal of Gerontology*, 24, 470-474.
- Adams, K. S. (2007). Visibility of disability, attributional style, psychological adjustment to disability, and self-advocacy skill in relation to student adaptation to college. *Dissertation Abstracts International*, Section A: Humanities and Social Sciences, 68, (9-A), pp. 3724.
- Aguayo, M. O., & Coady, N. F. (2001). The experience of deafened adults: Implications for rehabilitation services. *Health & Social Work*, 26, 269-276.
- Aldwin, C. M., & Yancura, L. A. (2003). Coping and health: A comparison of the stress and trauma literature. In P. P. Schnurr & B. L. Green (Eds.), *Trauma and health: Physical consequences of exposure to extreme stress*. Washington, DC: American Psychological Association.
- Andersson, G., & Hagnebo, C. (2003). Hearing impairment, coping strategies, and anxiety sensitivity. *Journal of Clinical Psychology in Medical Settings*, 10(1), 35-39.
- Antia, S. (1994). Strategies to develop peer interaction in young hearing-impaired children. *The Volt Review*, 96(4), 277-290.
- Arlinger, S. L., Lunner, T., Lyxell, B., & Pichora-Fuller, M.K. (2009). The emergence of cognitive hearing science. *Scandinavian Journal of Psychology*, 50, 371-384.
- Arnold, P. (1984). The education of the deaf child: For integration or autonomy? *American Annals of the Deaf*, 129, 29-37.
- Barlow, J. H., Turner, A. P., Hammond, C. L., & Gailey, L. (2007). Living with late deafness: Insight from between worlds. *International Journal of Audiology*, 46, 442-448.
- Bat-Chava, Y. (2000). Diversity of deaf identities. *American Annals of the Deaf*, 145, 420-428.

- Beck, A. T. (1967). *Depression: Cause and treatment*. Philadelphia, PA: University of Pennsylvania Press.
- Bess, F. H., Lichtenstein, M. J., Logan, S. A., Burger, M. C., & Nelson, E. (1989). Hearing impairment as a determinant of function in the elderly. *Journal of the American Geriatrics Society*, 37, 123-128.
- Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the impact of stressful life events. *Journal of Behavioral Medicine*, 4, 139-157.
- Billings, A. G., & Moos, R. H. (1984). Coping, stress, and social resources among adults with unipolar depression. *Journal of personality and Social Psychology*, 46, 877-891.
- Brennan, M. & Bally, S.J. (2010). Psychosocial adaptations to dual sensory loss in middle and late adulthood. *Trends in Amplification*, 11(281), 281-300.
- Brickman, P., & Campbell, D. T. (1971). Hedonic relativism and planning the good society. In M. H. Appley (Ed.), *Adaptation-level theory* (pp. 287-302). New York: Academic Press.
- Brickman, P., Coates, D., & Janoff-Bulman, R. (1978). Lottery winners and accident victims: Is happiness relative? *Journal of Personality and Social Psychology*, 36(8), 917-927.
- Budd, R. J., & Pugh, R. (1996). Tinnitus coping style and its relationship to tinnitus severity and emotional distress. *Journal of Psychosomatic Research*, 41(4), 327-335.
- Byrne, B. M. (1998). *Structural equations modeling with LISREL, PRELIS and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Calderon, R., & Greenberg, M. T. (2000). Challenges to parents and professionals in promoting socioemotional development in deaf children. In P. E. Spencer & C. J. Erting et al. (Eds.),

- The deaf child in the family and at school; Essays in honor of K. P. Meadow-Orlans* (pp. 167-185). Mahwah, NJ: Lawrence Erlbaum Associates.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.
- Chubon, R. A. (1994). *Social and psychological foundations of rehabilitation*. Springfield, IL: Charles C. Thomas.
- Clark, A. A., & Hovanitz, C. A. (1989). Dimensions of coping that contribute to psychopathology. *Journal of Clinical Psychology*, 45, 28-36.
- Cohen, J. (2003). A power primer. In A. E. Kazdin (Eds). *Methodological issues & strategies in clinical research*(3rd Ed.) (pp.427-436). Washington, DC: American Psychological Association.
- Coyne, J. C., Aldwin, C., & Lazarus, R. S. (1981). Depression and coping in stressful episodes. *Journal of Abnormal Psychology*, 90, 439-447.
- Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York: Wiley.
- Dalton, D. S., Cruickshanks, K. J., Klein, B. E. K., Klein, R., Wiley, T. L., & Nondahl, D. M. (2003). The impact of hearing loss on quality of life in older adults. *The Gerontologist*, 43, 661-668.
- de Graaf, R., & Bijl R. V. (2002). Determinants of mental distress in adults with severe auditory impairment: Differences between prelingual and postlingual deafness. *Psychosomatic Medicine*, 64, 61-70.
- Dekkers, J. C., Geenen, R., Evers, A. W. M., Kraaimaat, F. W., Bijlsma, J. W. J., & Godaert, G. L. R. (2001). Biopsychosocial mediators and moderators of stress-health relationships in

- patients with recently diagnosed rheumatoid arthritis. *Arthritis Care & Research*, 45, 307-316.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95, 542-575.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34-43.
- Diener, E., Lucas, R. E., & Scollon, C. N. (2006). Beyond the hedonic treadmill: Revisions to the adaptation theory of well-being. *American Psychologist*, 61, 305-314.
- Donahue-Jennings, K., & MacTurk, R. H. (1995). The motivational characteristics of infants and children with physical and sensory impairments. *Advances in Applied Developmental Psychology*, 12, 201-219.
- Endler, N. S. (1988). Hassles, health and happiness. In M. P. Janisse (Ed.), *Individual differences, stress and health psychology* (pp. 24-56). New York: Springer.
- Endler, N. S., & Parker, J. D. A. (1989). Coping with frustration to self-realization: Stress, anxiety, crises and adjustment. In E. Krau (Ed.), *Self-realization, success and adjustment* (pp. 153-164). New York: Praeger.
- Endler, N. S., & Parker, J. D. (1990). Multidimensional assessment of coping: A critical evaluation. *Journal of Personality and Social Psychology*, 58, 844-854.
- Faber, C.E. & Grontved, A.M. (2000). Cochlear implantation and change in quality of life. *Acta Otolaryngol*, 543, 151-153.

- Fraser, D.M., Hansmann, S., & Saladin, S.P. (2009). Psychosocial aspects of deafness: Implications for rehabilitation counselors. *Journal of the American Deafness and Rehabilitation Association*, 43(1), 52-68.
- Fried, L. P., Bandeen-Roche, K., Chaves, P. H. M., & Johnson, B. A. (2000). Preclinical mobility disability predicts incident mobility disability in older women. *Journal of Gerontology: Medical Sciences*, 55A, M43-M52.
- Folkman, S., & Lazarus, R. S. (1988a). Coping as a mediator of emotion. *Journal of Personality and Social Psychology*, 54, 466-475.
- Folkman, S., & Lazarus, R. S. (1988b). *Manual for the Ways of Coping Questionnaire*, Consulting Psychologists Press, Palo Alto, CA.
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, 55, 745-774.
- Funder, D., & Ozer, D (1983). Behavior as a function of the situation. *Journal of Personality and Social Psychology*, 44, 107-112.
- Gagne, J. P. (1992). Ancillary aural rehabilitation services for adult cochlear implant recipients: A review and analysis of the literature. *Journal of Speech-Language Pathology and Audiology*, 16(2), 121-128.
- Gomez, R. G., & Madey, S. F. (2001). Coping with hearing loss model for older adults. *Journal of Gerontology*, 56B(4), 223-225.
- Greenberg, M. T., & Kusche, C. A. (1993). *Promoting social and emotional development in deaf children: The PATHS project*. Seattle, WA: University of Washington Press.

- Hallberg, LR- M., & Carlsson, S. G. (1991). Hearing impairment, coping and perceived hearing handicap in middle-age subjects with acquired hearing loss. *British Journal of Audiology*, 25, 323-330.
- Hallberg, LR- M., Hallberg, U., & Kramer, S. E. (2008). Self-reported hearing difficulties, communication strategies and psychological general well-being (quality of life) in patients with acquired hearing impairment. *Disability and Rehabilitation*, 30, 203-212.
- Hallberg, LR- M., & Ringdahl, A. (2004). Living with cochlear implant: Experiences of 17 adult patients in Sweden. *International Journal of Audiology*, 43, 115-121.
- Hallberg, LR- M., Ringdahl, A., Holmes, A., & Carver, C. (2005). Psychological general well-being (quality of life) in patients with cochlear implants: Importance of social environment and age. *International Journal of Audiology*, 44, 706-712.
- Helvik, A., Jacobsen, G., & Hallberg, L. R. (2006). Psychological well-being of adults with acquired hearing impairment. *Disability and Rehabilitation*, 28, 535-545.
- Heppner, P. P., Cook, S. W., Wright, D. M., & Johnson, W. C. (1995). Progress in resolving problems: A problem-focused style of coping. *Journal of Counseling Psychology*, 42, 279-293.
- Heppner, P. P., Kivlighan, D. M., & Wampold, B. E. (1999). Research design in counseling (2nd Ed.). Belmont, CA: Wadsworth Publishing.
- Hoeymans, N. E., Feskens, E. J. M., Kromhout, D, & Van Den Bos, G. A. M. (1997). Ageing and the relationship between functional status and self-rated health in elderly men. *Social Science and Medicine*, 45, 1527-1536.

- Hovanitz, C. A., & Kozara, E. (1989). Life stress and clinically elevated MMPI scales: Gender differences in the moderating influences of coping. *Journal of Clinical Psychology, 45*, 766-777.
- Humphries, T. (1996). Of deaf-mutes, the strange, and the modern deaf self. In N. S. Glickman & M. A. Harvey (Eds.), *Culturally affirmative psychotherapy with deaf persons*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Jambor, E., & Elliott, M. (2005). Self-esteem and coping strategies among deaf students. *Journal of Deaf Studies and Deaf Education, 10*(1), 63-81.
- Joreskog, J. G. & Sorbom, D. (2005). *LISREL* for windows [computer software]. Lincolnwood, IL: Scientific Software International, Inc.
- Karademas, E. C. (2007). Positive and negative aspects of well-being.: Common and specific predictors. *Personality and Individual Differences, 43*, 277-287.
- Kashubeck-West, S., & Meyer, J. (2008). The well-being of women who are late-deafened. *Journal of Counseling Psychology, 55*, 463-472.
- Kazdin, A. E. (2000). Deafness and hearing loss. *Encyclopedia of Psychology (Volume 2)*. American Psychological Association: Oxford, NY.
- Kedde, H., & van Berlo, W. (2006). Sexual satisfaction and sexual self images of people with physical disabilities in the Netherlands. *Sexuality and Disability, 24*(1), 53-68.
- Kelley-Moore, J. A., Schumacher, J. G., Kahana E., & Kahana, B. (2006). When do older adults become “disabled?” Social and health antecedents of perceived disability in a panel study of the oldest old. *Journal of Health and Social Behavior, 47*(6), 126-141.

- Kennedy, M. (1994). Art-in-therapy: The role of art-communication and picture-art in working with abused deaf clients. In M. Corker, *Counseling: The deaf challenge* (pp. 202). Bristol, PA: Jessica Kingsley Publishers.
- Kenrick, D. T., & Funder, D. C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist*, 43, 23-34.
- Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, 82, 1007-1022.
- Kinnear, P.R., & Gray, C. D. (2009). *SPSS 16 made simple*. New York, NY: Psychology Press.
- Kusche, C. A., Garfield, T. S., & Greenberg, M. T. (1983). The understanding of emotional and social attributions in deaf adolescents. *Journal of Clinical Child Psychology*, 12(2), 153-160.
- Lazarus, R. S. (1993). Coping theory and research: Past, present and future. *Psychosomatic Medicine*, 55, 234-247.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Leigh, I. W. (2009). A lens on deaf identities. New York: Oxford University Press.
- Leigh, I. W. (1999). Inclusive education and personal development. *Journal of Deaf Studies and Deaf Education*, 4, 236-245.
- Leigh, I. W., Corbett, C. A., Gutman, V., & Morere, D. A. (1996). Providing psychological services to deaf individuals: A response to new perceptions of diversity. *Professional Psychology: Research and Practice*, 27, 364-371.
- Leigh, I. W., Robins, C. J., Welkowitz, J., & Bond, R. N. (1989). Toward greater understanding of depression in deaf individuals. *American Annals of the Deaf*, 134, 249-254.

- Leigh, I. W., & Stinson, M. S. (1991). Social environments, self-perceptions, and identity of hearing-impaired adolescents. *The Volta Review*, 93(5), 7-22.
- Lent, R. W. (2004). Toward a unifying theoretical and practical perspective on well-being and psychosocial adjustment. *Journal of Counseling Psychology*, 51, 482-509.
- Linkowski, D. C. (1971). A scale to measure acceptance of disability. *Rehabilitation Counseling Bulletin*, 14, 236-244.
- Livneh, H. (2001). Psychosocial adaptation to chronic illness and disability: A conceptual framework. *Rehabilitation Counseling Bulletin*, 44(3), 151-160.
- Livneh, H., & Antonak, R. F. (1990). Reactions to disability: An empirical investigation of their nature and structure. *Journal of Applied Rehabilitation Counseling*, 21(4), 13-21.
- Livneh, H., & Antonak, R. F. (1997). *Psychological adaptation to chronic illness and disability*. Gaithersburg, MD: Aspen Publisher.
- Livneh, H., & Antonak, R. F. (2005). Psychological adaptation to chronic illness and disability: A primer for counselors. *Journal of Counseling and Development*, 83, 2-20.
- Livneh, H. & Cook, D. (2005). Psychosocial Impact of Disability. In R. M. Parker, E. Szymanski, J. B. Patterson, (Eds.), *Rehabilitation counseling: Basics and beyond (4th ed.)*, (pp. 187-224). Austin, TX: Pro-Ed.
- Livneh, H., Lott, S. M., & Antonak, R. F. (2004). Patterns of psychosocial adaptation to chronic illness and disability: A cluster analytic approach. *Psychology, Health & Medicine*, 9, 411-430.
- Livneh, H., & Wilson, L. M. (2003). Coping strategies as predictors and mediators and moderators of disability-related variables and psychosocial adaptation: An exploratory investigation. *Rehabilitation Counseling Bulletin*, 46(4), 194-208.

- Lucas, R. E. (2007). Long-term disability is associated with lasting changes in subjective well-being: Evidence from two nationally representative longitudinal studies. *Journal of Personality and Social Psychology*, 92, 717-730.
- Maxwell-McCaw, D. & Zea, M. C. (in-press). The deaf acculturation scale: Development and validation of a 58-item measure.
- MacTurk, R. H., Meadow-Orlans, K. P., Koester, L. S., & Spencer, P.E. (1993). Social support, motivation, language and interaction: A longitudinal study of mothers and deaf infants. *American Annals of the Deaf*, 138(1), 19-25.
- Martz, E. C. (2002). Phases of adaptation to disability as predictors of future time orientation among individuals with spinal cord injury. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 63(5-B), pp. 2351.
- Martz, E. (2004). A one-year follow-up study on psychosocial adaptation of college students with disabilities. *Journal of Vocational Rehabilitation*, 21, 1-7.
- Mason, D. G. (1996). Quality of life for deaf and hard-of-hearing people. In R. Renwick, I. Brown, & M. Nagler (Eds.). *Quality of life in health promotion and rehabilitation: Conceptual approaches, issues, and applications* (pp. 237-252). Thousand Oaks, CA: SAGE Publications.
- Maxwell, M., Poeppelmeyer, D., & Polich, L. (1999). Deaf members and nonmembers: The creation of culture through communication practices. In D. Kovarsky & J. Felson Duchan, et-al. (Eds.), *Constructing (in)competence: Disabling evaluations in clinical and social interaction* (pp. 125-148). Mahwah, NJ: Lawrence Erlbaum Associates.
- McIntosh, A. (2000). When the deaf and the hearing interact: Communication features, relationships, and disability issues. In D. Braithwaite & T. Thompson (Eds.), *Handbook*

- of communication and people with disabilities: Research and application* (pp. 353-368). Mahwah, NJ: Lawrence Erlbaum Associates.
- Meikle, M. B., Vernon, J., & Johnson, R. M. (1984). The perceived severity of tinnitus. Some observations concerning a large population of tinnitus clinic patients. *Otolaryngology Head Neck Surgery*, 92, 689-696.
- Middleton, A., Hewison, J., & Mueller, R. F. (1998). Attitudes of Deaf adults toward genetic testing for hereditary deafness. *American Journal of Human Genetics*, 63, 1175-1180.
- Miklos, C. S. (2000). Application of a biopsychosocial model to predict psychological distress in adults with definite Meniere's disease, unilateral type. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 61(4-B), pp. 2212.
- Mona, L. R., Gardos, P. S., & Brown, R. C. (1995). Sexual self views of women with disabilities: The relationship among age-of-onset, nature of disability and sexual self-esteem. *Sexuality and Disability*, 12, 261-277.
- Moore, D.R. & Shannon, R.V. (2009). Beyond cochlear implants: awakening the deafened brain. *Nature Neuroscience*, 12(6), 686-691.
- Munoz-Baell, I. M., & Ruiz, M. T. (2000). Empowering the deaf. Let the deaf be deaf. *Journal of Epidemiology and Community Health*, 54(1), 40-44.
- MSM Productions. (2003). *DEAF.com media kit: Market profile*. Retrieved February 5, 2004, from http://www.msmproductionsltd.com/advertising_opportunities/deafcom_media_kit/market_profile.html .
- National Institute on Deafness and Other Communication Disorders. (1997). *Hearing loss*. Retrieved from <http://www.nidcd.nih.gov/health/statistics/begin.htm> .

- Newman, C. W., Jacobson, G. P., & Spitzer, J. B. (1996). Development of the Tinnitus Handicap Inventory. *Otolaryngology Head and Neck Surgery*, 122, 143-148.
- Newman, C. W., Weinstein, B. E., Jacobson, G. P., & Hug, G. A. (1990). The Hearing Handicap Inventory for Adults: Psychometric adequacy and audiometric correlates. *Ear and Hearing*, 11, 430-433.
- Nowack, K. M. (1989). Coping style, cognitive hardiness, and health status. *Journal of Behavioral Medicine*, 12, 145-158.
- Olson, A.D., Pugh, B.B., & Bishop, M. (2009). Knowledge about cochlear implants among vocational rehabilitation counselors. *Journal of Applied Rehabilitation Counseling*, 40(1), 27-34.
- Pavot, W., & Diener, E. (1993). Review of the Satisfaction with Life Scale. *Psychological Assessment*, 5(2), 164-172.
- Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 19, 2-21.
- Pensgaard, A. M., Sorensen, M. (2002). Empowerment through the sport context: A model to guide research for individuals with disability. *Adapted Physical Activity Quarterly*, 19, 48-67.
- Pipp-Siegel, S., & Biringer, Z. (1998). Assessing the quality of relationships between parents and children: The emotional availability scales. *The Volta Review*, 100, 237-249.
- Pisarski, A., Bohle, P., & Callan, V. J. (1998). Effects of coping strategies, social support and work-nonwork conflict on shift worker's health. *Scandinavian Journal of Work, Environment & Health*, 24(3), 141-145.

- Polat, F. (2003). Factors affecting psychosocial adjustment of deaf students. *Journal of Deaf Studies and Deaf Education*, 8, 325-339.
- Richardson, J. T., Long, G. L., & Foster, S. B. (2004). Academic engagement in students with a hearing loss in distance education. *Journal of Deaf Studies and Deaf Education*, 19(1), 68-85.
- Ringdahl, A., & Grimby, A. (2000). Severe-profound hearing impairment and health-related quality of life among post-lingual deafened Swedish adults. *Scandinavian Audiology*, 29, 266-275.
- Robitschek, C. (1998). Personal growth initiative: The construct and its measure. *Measurement and Evaluation in Counseling and Development*, 30(4), 183-198.
- Robitschek, C. (2003). Validity of the Personal Growth Initiative Scale scores with a Mexican American college student population. *Journal of Counseling Psychology*, 50, 496-502.
- Robitschek, C., & Kashubeck, S. (1999). A structural model of parental alcoholism, family functioning, and psychological health: The mediating effects of hardiness and personal growth orientation. *Journal of Counseling Psychology*, 46, 159-172.
- Ross, L., & Lyon, P. (2007). Escaping a silent world: profound hearing loss, cochlear implants and household interaction. *International Journal of Consumer Studies*, 31, 357-362.
- Rothschild, M. A., & Kampfe, C. M. (1997). Issues associated with late onset deafness. *Journal of the American Deafness and Rehabilitation Association*, 31(1), 1-16.
- Ryff, C. D. (1989a). Beyond Ponce de Leon and life satisfaction: New directions in quest of successful ageing. *International Journal of Behavioral Development*, 12(1), 35-55.
- Ryff, C. D. (1989b). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069-1081.

- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69, 719-727.
- Ryff, C. D., Keyes, C. L. M., & Shmotkin, D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, 82, 1007-1022.
- Ryff, C. D., Lee, Y. H., Essex, M. J., & Schmutte, P. S. (1994). My children and me: Midlife evaluations of grown children and of self. *Psychology and Aging*, 9(2), 195-205.
- Sanders, F. M. (1983). Communication and the development of autonomy: Reflections on "Children of a Lesser God." *International Journal of Family Psychiatry*, 4, 277-293.
- Satorra, A. (2000). Scaled and adjusted restricted tests in multi-sample analysis of moment structures. In Heijmans, R.D.H., Pollock, D.S.G. & Satorra, A. (eds.), *Innovations in multivariate statistical analysis* (pp.233-247). London: Kluwer Academic Publishers.
- Saunders, K. J. (2002). The relations among feminism, gender role orientation, and psychological well-being in women. *Dissertation Abstracts International*,
- Schafer, J.L. (1997). *Analysis of incomplete Multivariate Data*. Monographs on Statistics and Applied Probability, 72, Chapman and Hall/CRC.
- Seligman, M., & Csikszentmihalyi, M. (2000). Positive Psychology: An introduction. *American Psychologist*, 55(1), 5-14.
- Sevigny-Skyer, S. C. (1990). Personally speaking: A difference to be accepted. *Journal of Counseling & Development*, 68, 336-337.
- Sheridan, M. (2001). *Inner lives of deaf children: Interviews and analysis*. Washington, DC: Gallaudet University Press.

- Steinberg, A. (1991). Issues in providing mental health services to hearing-impaired persons. *Hospital and Community Psychiatry*, 42, 380-389.
- Stephens, D., Ringdahl, A., & Fitzmaurice, P. (2008). Reported benefits and shortcomings of cochlear implantation by patients and their significant others. *Cochlear Implants International*, 9(4), 186-198.
- Strelnikov, K., Rouger, J., Demonet, J.F., Lagleyre, S., Fraysse, B., Deguine, O., & Barone, P. (2010). Does brain activity at rest reflect adaptive strategies? Evidence from speech processing after cochlear implantation. *Cerebral Cortex*, 20(5), 1217-1222.
- Sue, D. W., & Sue, D. (2008). *Counseling the culturally diverse: Theory and practice* (5th ed.). New York: Wiley.
- Suls, J., David, J. P., & Harvey, J. H. (1996). Personality and coping: Three generations of research. *Journal of Personality*, 64, 711-735.
- Venn, J. J., & Wadler, F. (1990). Maximizing the independence of deaf-blind teenagers. *Journal of Visual Impairment and Blindness*, 84(3), 103-108.
- Welsh, G. S. (1952). An anxiety index and an internationalization ration for the MMPI. *Journal of Consulting Psycholgy*, 16, 65-72.
- Werngren-Elgstrom, M., Dehlin, O., & Iwarsson, S. (2003). Aspects of quality of life in persons with prelingual deafness using sign language: subjective wellbeing, ill-health symptoms, depression and insomnia. *Archives of Gerontology and geriatrics*, 37(1), 13-24.
- Wheaton, B. (1985). Models for the stress buffering functions of coping resources. *Journal of Health and Social Behavior*, 26, 352-364.
- Winogron, I. R. (1984). Sensory changes with age - Impact on psychological well-being. *Psychiatric Medicine*, 2(1), 1-26.

World Health Organization. (1980). International classification of impairments, disabilities and handicaps, Geneva: WHO.

Appendix A

Measures

Demographic Questionnaire

Background Information

Please respond to the following questions.

1. Age: _____(in years)
2. Gender: (which one)
 - a. Female
 - b. Male
 - c. Transgender
 - d. Other_____
3. Sexual orientation (choose as many as apply):
 - a. Gay
 - b. Bisexual
 - c. Heterosexual
 - d. Other_____
4. Race/ethnicity (choose the primary one):
 - a. African American/Black
 - b. Caucasian/White
 - c. Asian
 - d. Pacific Islander
 - f. American Indian
 - g. Mixed race
 - h. Other_____
5. Are you hispanic/latino?
 - a. Yes
 - b. No
6. Where did you learn about this study?
 - a. On a listserve
 - i. Which one? _____
 - b. From a friend/relative
 - c. Other? _____
7. Do you have a hearing loss now or are you deaf now?
 - a. Hearing loss
 - b. Deaf
8. How old were you when you lost your hearing/became deaf? _____ (in years)
9. Do you consider yourself late-deafened? (Late-deafness is (majority) hearing loss or deaf after age 12)
 - a. Yes
 - b. No
10. Do you consider your hearing loss or deafness to be a medical condition?
 - a. Yes

- b. No
11. Do you consider your hearing loss or deafness to be a disability?
- a. Yes
 - b. No
12. Cause of hearing loss –
- a. Genetic/Hereditary
 - b. Pregnancy related
 - c. Illness
 - d. Accident/Injury
 - e. Cannot be determined
13. Type of hearing impairment:
- a. Mild (27-40 dB, ANSI)
 - b. Moderate (41-55 dB, ANSI)
 - c. Moderate-Severe (56-70 dB, ANSI)
 - d. Severe (71-90 dB, ANSI)
 - e. Profound (91 dB and above, ANSI)
14. Are you part of the following?
- a. Hearing culture
 - b. Deaf culture
 - c. Bi-cultural
 - d. Neither
 - e. Other _____
15. Do you use sign language?
- a. Yes
 - b. No
16. What is your preferred mode of communication? (choose one)
- a. Oral language
 - b. Sign language
 - c. Text
 - d. Total Communication
 - e. Other _____
17. Do you have another hearing condition besides hearing loss?
- a. Meniere's Disease
 - b. Tinnitus
 - c. Other _____ please list
18. Do you have a disability (besides hearing loss or being Deaf)?
(choose as many as apply)
- a. Low Vision
 - b. Legally blind
 - c. Learning disability
 - d. Mental retardation
 - e. Attention Deficit Disorder
 - f. Emotional disorder
 - g. Cerebral Palsy
 - h. Spinal cord injury
 - i. Head injury

j. Other condition _____

19. What type of high school did you go to? (pick one)

- a. Oral education
- b. ASL education
- c. Mainstreamed/Integrated
- d. Other _____

20. Years of completed education:

- a. Grade school
- b. High school
- c. Some college
- d. College
- e. Graduate school

21. Current relationship status (choose one)

- a. Single
- b. Partnered/Married
- c. Separated
- d. Cohabiting
- e. Divorced
- f. Widowed
- g. Other _____

22. How would you classify your socioeconomic status?

- a. Working class
- b. Lower middle class
- c. Middle class
- d. Upper middle class
- e. Upper class

23. Where do you live now?

- a. Northeast
- b. Midwest
- c. South
- d. West

24. Are you employed?

- a. Yes
- b. No

25. If you are employed, which describes your employment?

- a. Full time
- b. Part time

Please answer the following questions on a scale from

1 (Strongly disagree) to 5 (Strongly agree)

26. I call myself deaf.

27. I feel that I am part of the deaf community

28. I am comfortable with deaf people.

29. Being involved in the deaf world (and with deaf people) is an important part of my life.

30. My deaf identity is an important part of who I am.

31. I am comfortable with hearing people.

32. I call myself hearing-impaired or hard-of-hearing.
33. Being involved in the hearing world (and with hearing people) is an important part of my life.
34. I often wish that I could hear better or becoming hearing.
35. I feel that I am part of the hearing world.

Psychological Well-Being Scale

Scales of Psychological Well-Being

Psychometric Properties. Attached are items for six 14-item scales of psychological well-being constructed to measure the dimensions of **autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance**. Internal consistency (alpha) coefficients are indicated on each scale. Correlations of each scale with its own 20-item parent scale are also provided. Reliability and validity assessments of the 20-item parent scales are detailed in Ryff (1989) -- Journal of Personality and Social Psychology, 57, 1069-1081. Psychometric properties of the 3-item scales are detailed in Ryff & Keyes (1995) -- Journal of Personality and Social Psychology, 69, 719-727. The 3-item scales were developed for national telephone surveys. They have low internal consistency and are not recommended for high quality assessment of well-being.

Presentation Format/Scoring. Items from the separate scales are **mixed** (by taking one item from each scale successively into one continuous self-report instrument). Participants respond using a six-point format: strongly disagree (1), moderately disagree (2), slightly disagree (3), slightly agree (4), moderately agree (5), strongly agree (6). Responses to negatively scored items (-) are reversed in the final scoring procedures so that high scores indicate high self-ratings on the dimension assessed.

Length Options. The **14-item scales**, shown on the attached pages are what we currently employ in our own studies (see Reference List).

The **9-item scales**, indicated by brackets around the item number [#], are currently in use in the Wisconsin Longitudinal Study. The specific items for the 9-item scales include Autonomy 2, 3, 4, 5, 6, 9, 10, 11, 14; Environmental Mastery 1, 2, 3, 4, 5, 7, 9, 13, 14; Personal Growth 1, 4, 5, 6, 9, 10, 11, 13, 14; Positive Relations With Others 1, 2, 3, 4, 6, 8, 9, 10, 12; Purpose In Life 2, 3, 5, 6, 7, 8, 9, 10, 11; Self-Acceptance 1, 2, 3, 5, 6, 7, 10, 12, 13.

The **3-item scales**, shown in *bold and italics*, are currently in use in various large-scale national and international surveys. The specific items for the 3-item scales include Autonomy 6, 9, 14; Environmental Mastery 1, 2, 4; Personal Growth 5, 11, 13; Positive Relations With Others 2, 9, 10; Purpose In Life 2, 10, 11; Self-Acceptance 1, 5, 7

AUTONOMY

Definition: High Scorer: Is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behavior from within; evaluates self by personal standards.

Low Scorer: Is concerned about the expectations and evaluations of others; relies on judgments of others to make important decisions; conforms to social pressures to think and act in certain ways.

- (-) 1. Sometimes I change the way I act or think to be more like those around me.
- (+) [2.] I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.
- (+) [3.] My decisions are not usually influenced by what everyone else is doing.
- (-) [4.] I tend to worry about what other people think of me.
- (+) [5.] Being happy with myself is more important to me than having others approve of me.
- (-) [6.] ***I tend to be influenced by people with strong opinions.***
- (+) 7. People rarely talk me into doing things I don't want to do.
- (-) 8. It is more important to me to "fit in" with others than to stand alone on my principles.
- (+) [9.] ***I have confidence in my opinions, even if they are contrary to the general consensus.***
- (-) [10.] It's difficult for me to voice my own opinions on controversial matters.
- (-) [11.] I often change my mind about decisions if my friends or family disagree.
- (+) 12. I am not the kind of person who gives in to social pressures to think or act in certain ways.
- (-) 13. I am concerned about how other people evaluate the choices I have made in my life.
- (+) [14.] ***I judge myself by what I think is important, not by the values of what others think is important.***

(+) indicates positively scored items

(-) indicates negatively scored items

Internal consistency (coefficient alpha) = .83

Correlation with 20-item parent scale = .97

ENVIRONMENTAL MASTERY

Definition: High Scorer: Has a sense of mastery and competence in managing the environment; controls complex array of external activities; makes effective use of surrounding opportunities; able to choose or create contexts suitable to personal needs and values.
Low Scorer: Has difficulty managing everyday affairs; feels unable to change or improve surrounding context; is unaware of surrounding opportunities; lacks sense of control over external world.

- (+) [1.] *In general, I feel I am in charge of the situation in which I live.*
- (-) [2.] *The demands of everyday life often get me down.*
- (-) [3.] I do not fit very well with the people and the community around me.
- (+) [4.] *I am quite good at managing the many responsibilities of my daily life.*
- (-) [5.] I often feel overwhelmed by my responsibilities.
- (+) 6. If I were unhappy with my living situation, I would take effective steps to change it.
- (+) [7.] I generally do a good job of taking care of my personal finances and affairs.
- (-) 8. I find it stressful that I can't keep up with all of the things I have to do each day.
- (+) [9.] I am good at juggling my time so that I can fit everything in that needs to get done.
- (+) 10. My daily life is busy, but I derive a sense of satisfaction from keeping up with everything.
- (-) 11. I get frustrated when trying to plan my daily activities because I never accomplish the things I set out to do.
- (+) 12. My efforts to find the kinds of activities and relationships that I need have been quite successful.
- (-) [13.] I have difficulty arranging my life in a way that is satisfying to me.
- (+) [14.] I have been able to build a home and a lifestyle for myself that is much to my liking.

- (+) indicates positively scored items
- (-) indicates negatively scored items

Internal consistency (coefficient alpha) = .86

Correlation with 20-item parent scale = .98

PERSONAL GROWTH

Definition: High Scorer: Has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realizing his or her potential; sees improvement in self and behavior over time; is changing in ways that reflect more self knowledge and effectiveness.

Low Scorer: Has a sense of personal stagnation; lacks sense of improvement or expansion over time; feels bored and uninterested with life; feels unable to develop new attitudes or behaviors.

- (-) [1.] I am not interested in activities that will expand my horizons.

- (+) 2. In general, I feel that I continue to learn more about myself as time goes by.
- (+) 3. I am the kind of person who likes to give new things a try.
- (-) [4.] I don't want to try new ways of doing things--my life is fine the way it is.
- (+) [5.] ***I think it is important to have new experiences that challenge how you think about yourself and the world.***
- (-) [6.] When I think about it, I haven't really improved much as a person over the years.
- (+) 7. In my view, people of every age are able to continue growing and developing.
- (+) 8. With time, I have gained a lot of insight about life that has made me a stronger, more capable person.
- (+) [9.] I have the sense that I have developed a lot as a person over time.
- (-) [10.] I do not enjoy being in new situations that require me to change my old familiar ways of doing things.

- (+) [11.] ***For me, life has been a continuous process of learning, changing, and growth.***
- (+) 12. I enjoy seeing how my views have changed and matured over the years.
- (-) [13.] ***I gave up trying to make big improvements or changes in my life a long time ago.***
- (-) [14.] There is truth to the saying you can't teach an old dog new tricks.

- (+) indicates positively scored items
- (-) indicates negatively scored items

Internal consistency (coefficient alpha) = .85

Correlation with 20-item parent scale = .97

POSITIVE RELATIONS WITH OTHERS

Definition: High Scorer: Has warm satisfying, trusting relationships with others; is concerned about the welfare of others; capable of strong empathy, affection, and intimacy; understands give and take of human relationships.

Low Scorer: Has few close, trusting relationships with others; finds it difficult to be warm, open, and concerned about others; is isolated and frustrated in interpersonal relationships; not willing to make compromises to sustain important ties with others.

- (+) [1.] Most people see me as loving and affectionate.
- (-) [2.] *Maintaining close relationships has been difficult and frustrating for me*
- (-) [3.] I often feel lonely because I have few close friends with whom to share my concerns.
- (+) [4.] I enjoy personal and mutual conversations with family members or friends.
- (+) 5. It is important to me to be a good listener when close friends talk to me about their problems.
- (-) [6.] I don't have many people who want to listen when I need to talk.
- (+) 7. I feel like I get a lot out of my friendships.
- (-) [8.] It seems to me that most other people have more friends than I do.
- (+) [9.] *People would describe me as a giving person, willing to share my time with others.*
- (-) [10.] *I have not experienced many warm and trusting relationships with others.*
- (-) 11. I often feel like I'm on the outside looking in when it comes to friendships.
- (+) [12.] I know that I can trust my friends, and they know they can trust me.
- (-) 13. I find it difficult to really open up when I talk with others.
- (+) 14. My friends and I sympathize with each other's problems.
- (+) indicates positively scored items
- (-) indicates negatively scored items

Internal consistency (coefficient alpha) = .88

Correlation with 20-item parent scale = .98

PURPOSE IN LIFE

Definition: High Scorer: Has goals in life and a sense of directedness; feels there is meaning to present and past life; holds beliefs that give life purpose; has aims and objectives for living.

Low Scorer: Lacks a sense of meaning in life; has few goals or aims, lacks sense of direction; does not see purpose of past life; has no outlook or beliefs that give life meaning.

- (+) 1. I feel good when I think of what I've done in the past and what I hope to do in the future.
- (-) [2.] *I live life one day at a time and don't really think about the future.*
- (-) [3.] I tend to focus on the present, because the future nearly always brings me problems.
- (+) 4. I have a sense of direction and purpose in life.
- (-) [5.] My daily activities often seem trivial and unimportant to me.
- (-) [6.] I don't have a good sense of what it is I'm trying to accomplish in life.
- (-) [7.] I used to set goals for myself, but that now seems like a waste of time.
- (+) [8.] I enjoy making plans for the future and working to make them a reality.
- (+) [9.] I am an active person in carrying out the plans I set for myself.
- (+) [10.] *Some people wander aimlessly through life, but I am not one of them.*
- (-) [11.] *I sometimes feel as if I've done all there is to do in life.*
- (+) 12. My aims in life have been more a source of satisfaction than frustration to me.
- (+) 13. I find it satisfying to think about what I have accomplished in life.
- (-) 14. In the final analysis, I'm not so sure that my life adds up to much.
- (+) indicates positively scored items
- (-) indicates negatively scored items

Internal consistency (coefficient alpha) = .88

Correlation with 20-item parent scale = .98

SELF-ACCEPTANCE

Definition: High Scorer: Possesses a positive attitude toward the self; acknowledges and accepts multiple aspects of self including good and bad qualities; feels positive about past life.

Low Scorer: Feels dissatisfied with self; is disappointed with what has occurred in past life; is troubled about certain personal qualities; wishes to be different than what he or she is.

- (+) [1.] ***When I look at the story of my life, I am pleased with how things have turned out.***
- (+) [2.] In general, I feel confident and positive about myself.
- (-) [3.] I feel like many of the people I know have gotten more out of life than I have.
- (-) 4. Given the opportunity, there are many things about myself that I would change.
- (+) [5.] ***I like most aspects of my personality.***
- (+) [6.] I made some mistakes in the past, but I feel that all in all everything has worked out for the best.
- (-) [7.] ***In many ways, I feel disappointed about my achievements in life.***
- (+) 8. For the most part, I am proud of who I am and the life I lead.
- (-) 9. I envy many people for the lives they lead.
- (-) [10.] My attitude about myself is probably not as positive as most people feel about themselves.
- (-) 11. Many days I wake up feeling discouraged about how I have lived my life.
- (+) [12.] The past had its ups and downs, but in general, I wouldn't want to change it.
- (+) [13.] When I compare myself to friends and acquaintances, it makes me feel good about who I am.
- (-) 14. Everyone has their weaknesses, but I seem to have more than my share.
- (+) indicates positively scored items
- (-) indicates negatively scored items

Internal consistency (coefficient alpha) = .91

Correlation with 20-item parent scale = .99

HEARING HANDICAP INVENTORY FOR ADULTS

Instructions: The purpose of the scale is to identify the problems your hearing loss may be causing you.
Check Yes, Sometimes, or No for each question.
Do not skip a question if you avoid a situation because of a hearing problem.
Please write N/A if the question does not apply.

	Yes	Sometimes	No	
1. Does a hearing problem cause you to use the phone less often than you would like?	___	___	___	s
2. Does a hearing problem cause you to feel embarrassed when meeting new people?	___	___	___	e
3. Does a hearing problem cause you to avoid groups of people?	___	___	___	s
4. Does a hearing problem make you irritable?	___	___	___	e
5. Does a hearing problem cause you to feel frustrated when talking to members of your family?	___	___	___	e
6. Does a hearing problem cause you difficulty when attending a party?	___	___	___	s
7. Does a hearing problem cause you difficulty hearing/understanding co-workers, clients, or customers?	___	___	___	s
8. Do you feel handicapped by a hearing problem?	___	___	___	e
9. Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?	___	___	___	s
10. Does a hearing problem cause you to feel frustrated when talking to co-workers, clients, or customers?	___	___	___	e
11. Does a hearing problem cause you difficulty in the movies or theater?	___	___	___	s
12. Does a hearing problem cause you to be nervous?	___	___	___	e
13. Does a hearing problem cause you to visit friends, relatives, or neighbors less often than you would like?	___	___	___	s
14. Does a hearing problem cause you to have arguments with family members?	___	___	___	e
15. Does a hearing problem cause you difficulty when listening to TV or radio?	___	___	___	s
16. Does a hearing problem cause you to go shopping less often than you would like?	___	___	___	s
17. Does any problem or difficulty with your hearing upset you at all?	___	___	___	e
18. Does a hearing problem cause you to want to be by yourself?	___	___	___	e
19. Does a hearing problem cause you to talk to family members less often than you would like?	___	___	___	s
20. Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	___	___	___	e
21. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?	___	___	___	s
22. Does a hearing problem cause you to feel depressed?	___	___	___	e
23. Does a hearing problem cause you to listen to TV or radio less often than you would like?	___	___	___	s
24. Does a hearing problem cause you to feel uncomfortable when talking to friends?	___	___	___	e
25. Does a hearing problem cause you to feel left out when you are with a group of people?	___	___	___	e

For Clinician's use only: Yes = 4 Sometimes = 2 No = 0 Total score for e-questions: ____ Total score for s-questions: ____

Reactions to Impairment and Disability Inventory

Following is a list of possible reactions to the occurrence of a physical impairment or a disabling condition. Please circle the appropriate number to the right of each statement that indicates to what extent you are experiencing each specific reaction to your impairment or disability. There are no "right" or "wrong" answers. The degree to which you truly experience each reaction, as expressed by the statements, should be your answer. Please respond to all statements on the inventory as honestly as possible. The information you provide will remain completely anonymous.

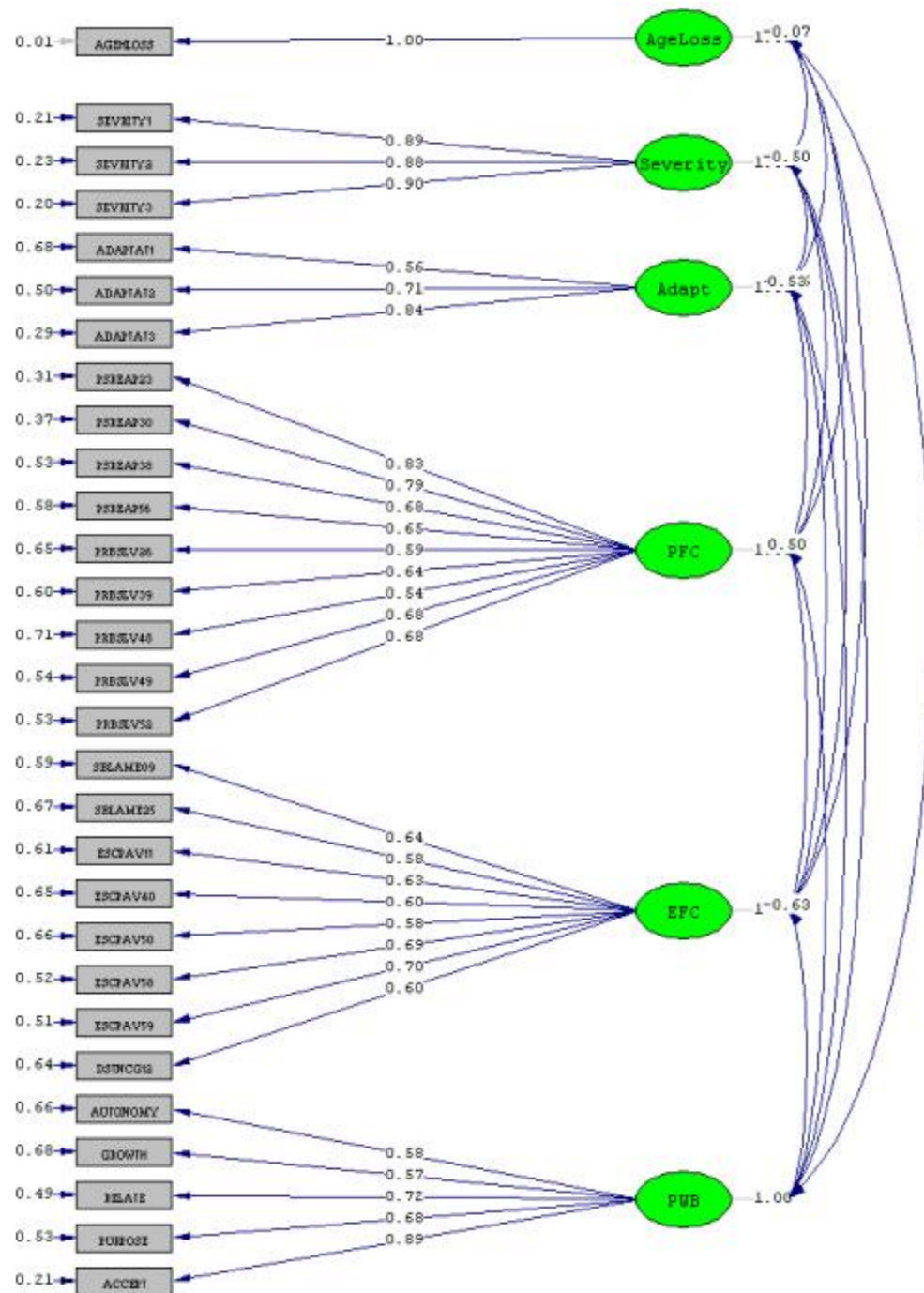
1	=	Never	Reaction is never experienced
2	=	Rarely	Reaction is seldom experienced, 1 to 4 times per month
3	=	Sometimes	Reaction is occasionally experienced, 5 to 9 times per month
4	=	Often	Reaction is frequently experienced, 10 or more times per month

7. I am satisfied with my present abilities despite my disability.
11. There are more important things in life than those that my impairment prevents me from doing.
14. I am rearranging some of my life priorities.
15. Although I am restricted in certain ways, there is still much I am able to do.
19. I have been through a crisis and feel that I understand things better.
27. When I look in the mirror, I see myself and not a disability.
30. Everything in my life is coming together again.
35. I am seeking new meaning for my life.
36. I am interested in getting socially involved with other people.
40. I do not mind accepting help when I need it.
46. I realize that my impairment is part of me, but I do not let it interfere with my life.
51. I am interested in forming new friendships.
55. Despite my impairment, I can do most things non-impaired people can do.
58. I am interested in making plans for my future.
60. I can cope with almost all problems I face.

Appendix B

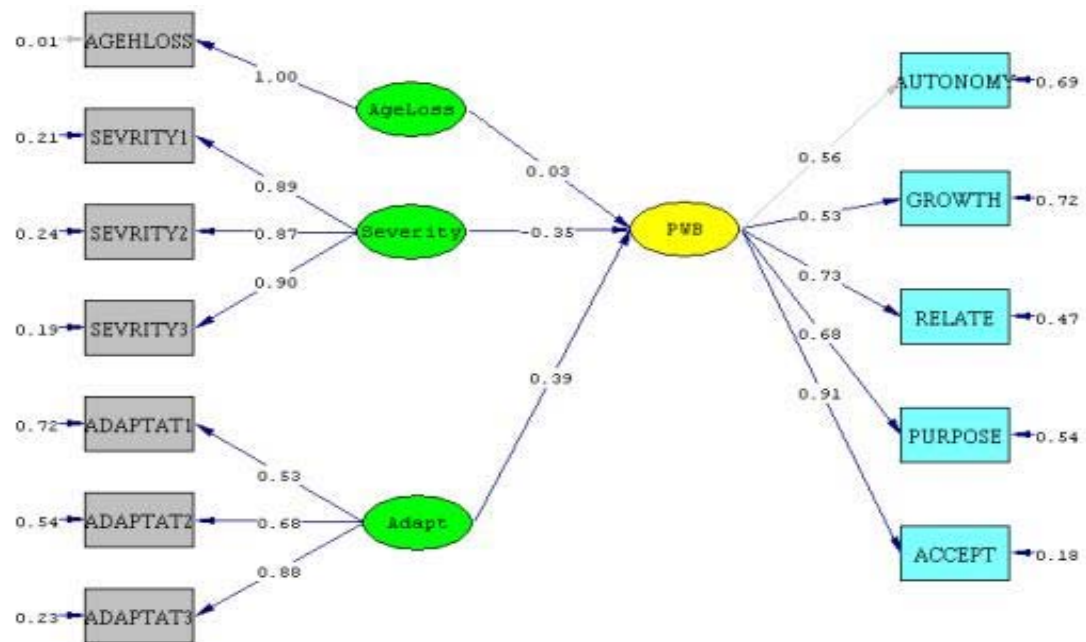
Figures & Tables

Figure 1
Measurement Model



Chi-Square=847.26, df=363, P-value=0.00000, RMSEA=0.081

Figure 2
Structural Model – Direct Effects Only



Chi-Square=205.19, df=49, P-value=0.00000, RMSEA=0.126

Figure 3
Full Structural Model – Direct and Indirect Effects

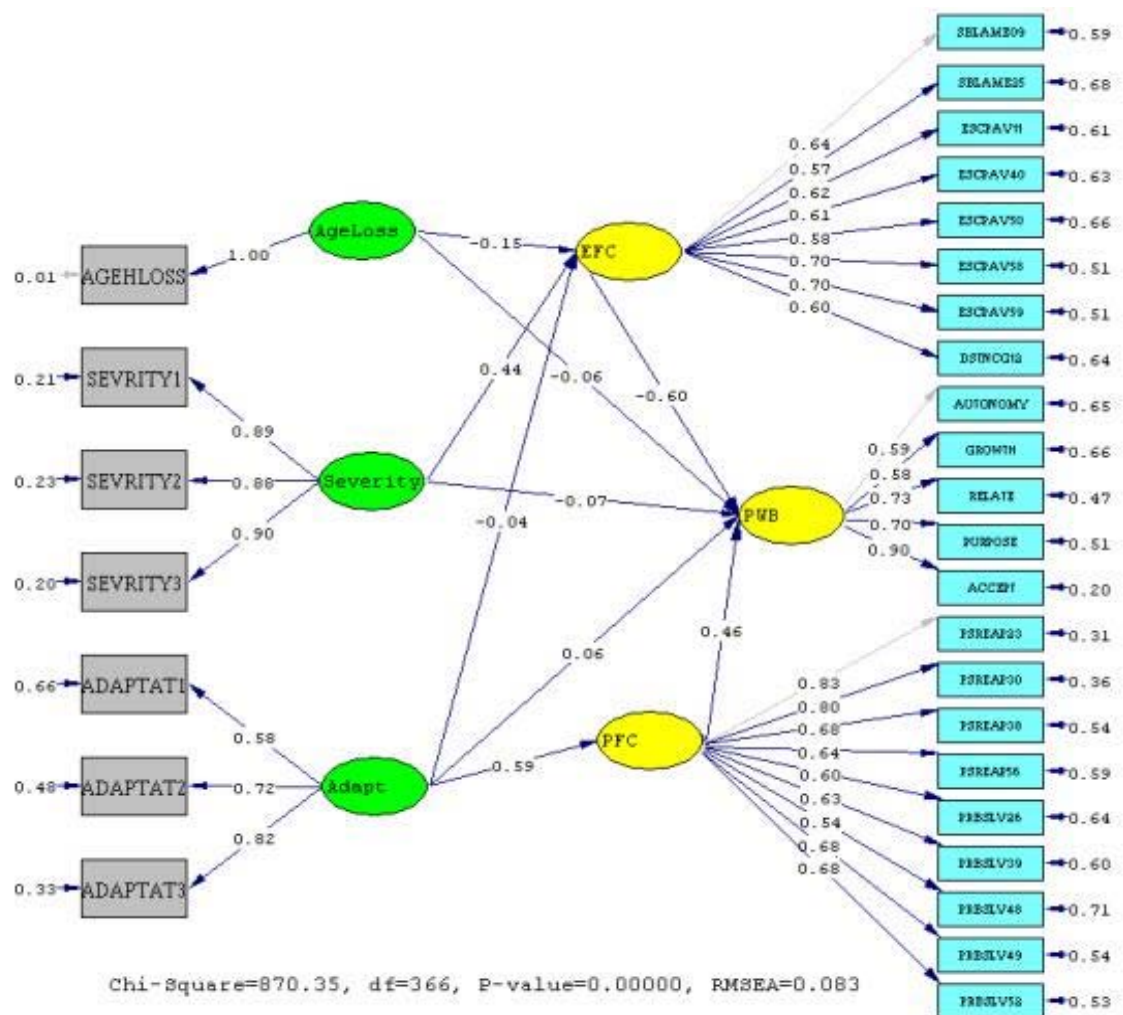


Figure 4
Results for the Structural Equation Model (CFI = .90; $p = 0.00$, $RMSEA = 0.08$)

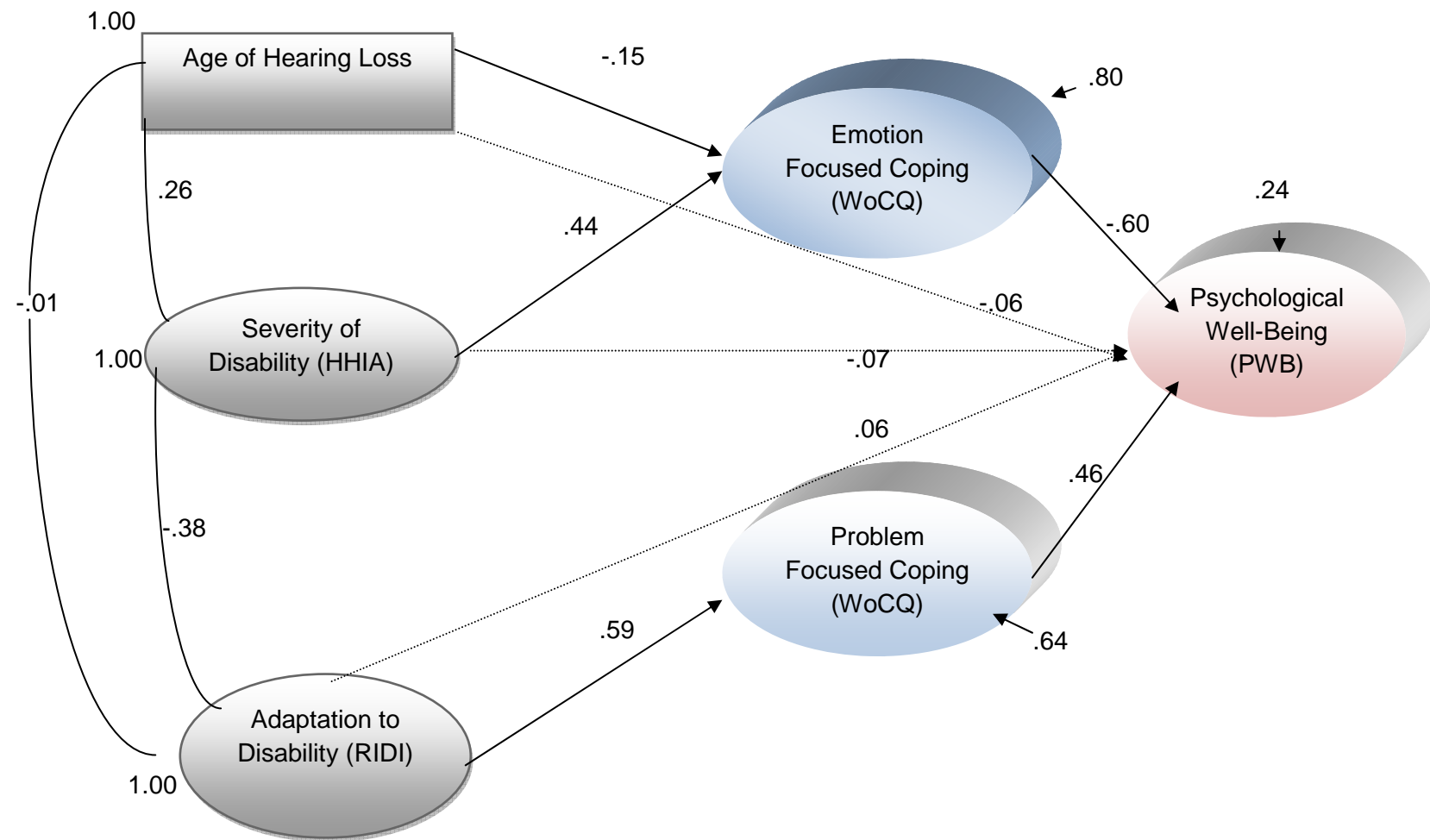


Figure 5
Results for the Predicted or Fully Mediated Model (CFI = .90; $p = 0.00$, RMSEA = 0.08)

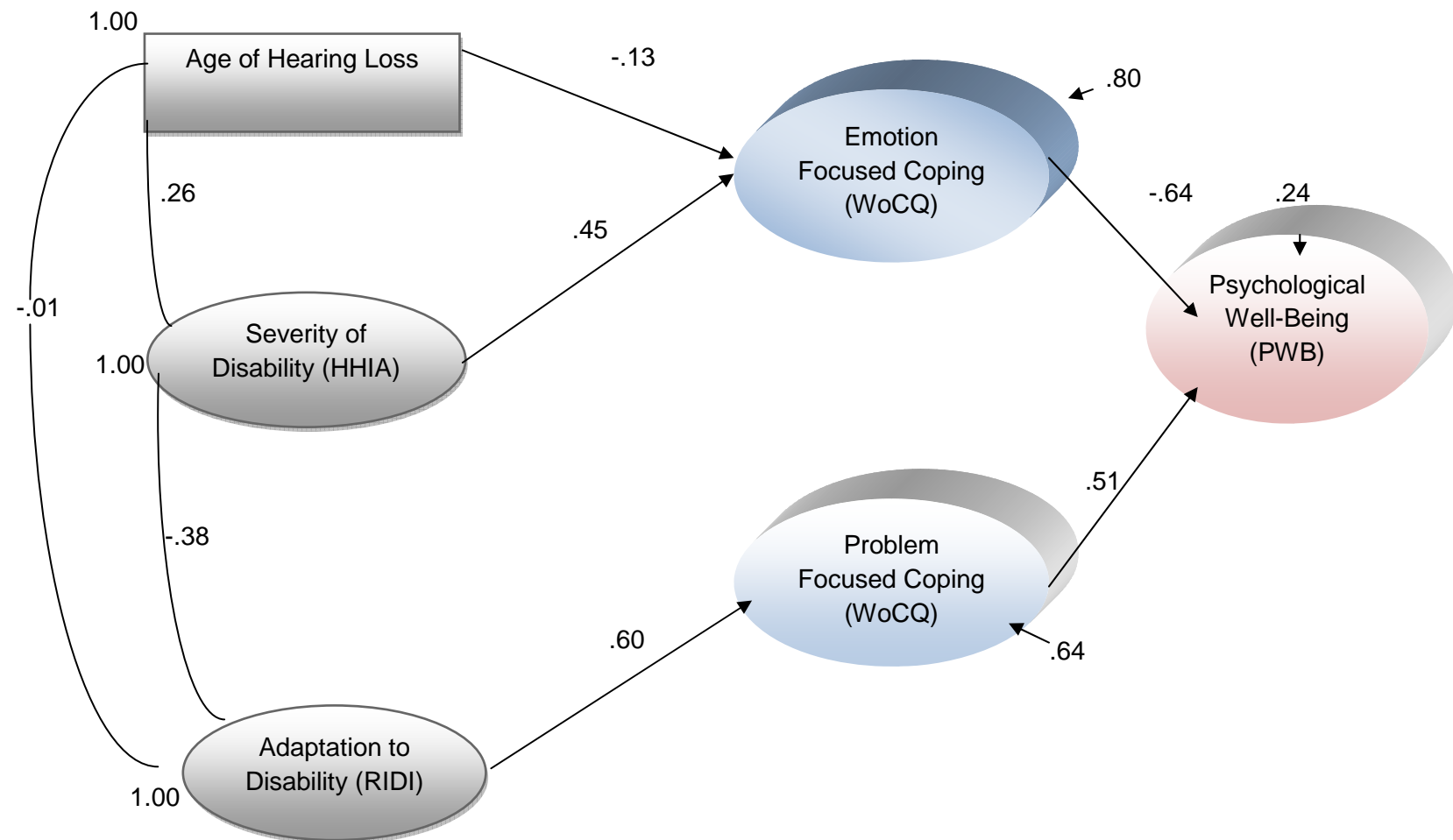


Table 3
Subscale Means, Standard Deviations (SD), Cronbach's Alpha & Intercorrelations

	M	SD	Cronbach's Alpha	1	2	3	4	5	6	7	8	9	10	11
1. Autonomy	61.16	11.12	0.85	1										
2. Environmental Mastery	53.72	7.59	0.54	.546**	1									
3. Personal Growth	65.54	10.67	0.88	.576**	.612**	1								
4. Positive Relations	58.59	12.64	0.88	.429**	.688**	.610**	1							
5. Purpose in Life	59.99	13.12	0.9	.493**	.749**	.746**	.713**	1						
6. Self-Acceptance	56.19	15.62	0.94	.612**	.816**	.700**	.764**	.845**	1					
7. PWB Total	355.18	60.34	0.97	.710**	.853**	.831**	.836**	.902**	.942**	1				
8. HHIA Total	60.24	24.79	0.95	-.207**	-.435**	-.327**	-.471**	-.458**	-.492**	-.476**	1			
9. WoCQ EFC	1.05	0.444	0.87	-.308**	-.294**	-.178**	-.253**	-.27***	-.325**	-.323**	.215**	1		
10 WoCQ PFC	1.29	0.497	0.87	0.095	.254**	.378**	.236**	.336**	.248**	.303**	-.168**	.514**	1	
11. RIDI Total	22.89	3.24	0.81	.188**	.394**	.543**	.411**	.528**	.469**	.503**	-.272**	0.014	.456**	1

** . Correlation is significant at the 0.01 level

Note : PWB= Psychological Well-being; HHIA = Hearing Handicap Inventory for Adults; WoCQ EFC = Ways of Coping Questionnaire-Emotion Focused Coping;
 WoCQ PFC= Ways of Coping Questionnaire-Problem Focused Coping; RIDI= Reaction to Illness and Disability Inventory

Table 4
Psychological Well-Being of Late-Deafened Adults Compared to Kashubeck-West & Meyer (2008) Sample

Variable	<u>Current Sample (n =202)</u>		<u>Kashubeck-West & Meyer (n =138)</u>		<i>t</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Autonomy	61.16	11.12	63.23	11.01	1.69	0.19
Environmental Mastery	53.72	7.59	57.08	11.59	3.23***	0.34
Personal Growth	65.54	10.67	69.94	8.77	4.01***	0.45
Positive Relations	58.59	12.64	60.49	13.64	1.32	0.14
Purpose in Life	59.99	13.12	63.85	12.78	2.69**	0.30
Self-Acceptance	56.19	15.62	59.30	14.47	1.86	0.21
PWB Total	355.18	60.34	373.86	59.64	2.82**	0.31

p* < .01. *p* < .001

Note : PWB= Psychological Well-being

Table 5
Adaptation of Late-Deafened Adults Compared to Livneh & Wilson (2003) Sample

Variable	<u>Current Sample (n =202)</u>		<u>Livneh & Wilson (n =121)</u>		<i>t</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Acknowledgement	19.66	3.56	21.41	3.84	4.15***	0.47
Adjustment	26.12	4.84	25.28	4.92	1.5	0.17

p* < .01. *p* < .001

Note : Adaptation = acknowledgement and adjustment